King County
Housing
Authority

MOVING TO WORK

FY 2019 ANNUAL REPORT

KING COUNTY HOUSING AUTHORITY

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A. SOURCES AND USES OF MTW FUNDS
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While this report covers King County Housing Authority's Moving to Work activities and accomplishments during 2019, it is impossible to ignore the current state of affairs as this report goes to press. The COVID-19 pandemic's disproportionate impact on communities of color is providing stark evidence of how this country's long history of racial discrimination in the housing arena — by both public and private actors — has shaped disparities not only in housing stability but also in household wealth, education, employment, and health. It makes the work we do here — and the approaches we take to complete it — all the more urgent and pressing.

KCHA continues to expand our HUD-funded programs, with a strong focus on the crucial role we play as part of the regional safety net. In 2019, we housed more than 16,800 households through these efforts. Almost half of new households served reported that they were experiencing homelessness prior to receiving KCHA's housing assistance. Our participation in the Moving to Work program has made possible a steady expansion in the number of households we serve and at the same time provided the program flexibility critical for assuring the ongoing housing stability of some of our community's most marginalized households.

Program efficiencies achieved under MTW enabled KCHA to serve 110% of HUD baseline in 2019 — fulfilling a key congressional objective for this program. MTW flexibility also continues to facilitate the design and implementation of innovative local housing initiatives that effectively pair housing resources with human services in order to address community priorities. One example under development in 2019 is the While In-School Housing (WISH) program. Designed in partnership with Highline Community College, this pilot provides time-limited vouchers to community college students experiencing homelessness, a growing issue in our region and across the country. WISH joins a long list of KCHA local initiatives and community partnerships that provide more than 4,200 units of dedicated housing to people experiencing homelessness and people with disabilities.

KCHA also continues to sustain our long tradition of excellence in the management and maintenance of our federally subsidized housing stock. In 2019, $17.5 million in MTW resources were committed to major repairs in this portfolio. Regional in-house repair crews, an innovation made possible under MTW, provided substantial makeovers for 135 units upon vacate. This process eliminates the need to relocate whole buildings or bring in outside contractors to address unit interiors. Fifteen aging elevators in mid-rise communities for seniors and people with disabilities were replaced in the final phase of KCHA's MTW-enhanced Energy Performance Contract project. The focus on our physical housing inventory continues to yield excellent REAC scores, averaging 96.25 in 2019 (one of the highest scores for a large housing authority in the nation), and an adjusted occupancy rate of 99.56%.

For many of the households we serve, federal housing assistance provides temporary support on the road to self-sufficiency. Our commitment starts with promoting equitable education opportunities for the children we house. The MTW program enables KCHA to partner with school districts and families

across the region. Our joint efforts have focused on early learning programs, engaging and empowering parents as "first" teachers, supporting housing and classroom stability, providing access to quality after-school and mentorship programs operating out of the 15 community centers that KCHA has built, and improving high school graduation rates.

KCHA is also continuing to broaden geographic choice. National research has established that young children in low-income families that move to high-opportunity neighborhoods — communities with strong schools and local economies, healthy and secure environments, and robust transportation linkages — will have significantly better life outcomes over time. In partnership with the Seattle Housing Authority and a national team of researchers led by Harvard economist Raj Chetty, KCHA successfully completed the first phase of the Creating Moves to Opportunity initiative. This randomized control trial has helped identify effective approaches for empowering Housing Choice Voucher recipients to make informed locational choices and successfully secure housing in the community of their choice. The research team's report is included as an attachment to this document. The learnings from this pilot have now been incorporated into a congressionally funded national mobility initiative — yet another example of an MTW-enabled pilot informing national policy. At the close of 2019, 30% of KCHA's extremely low-income households with children lived in neighborhoods considered high or very high opportunity.

While geographic mobility is an important tool, investments that bring opportunity into under-resourced neighborhoods, and anti-displacement efforts that preserve existing low-income communities in the face of gentrification and growing market pressures, are equally important. In 2019, KCHA purchased six properties in neighborhoods rapidly losing affordability, preserving 1,355 units of affordable housing. We also continued the build-out of Greenbridge, a mixed-use, mixed-income community in the heart of White Center, one of King County's most marginalized and underserved neighborhoods.

KCHA's unrelenting pursuit of operational efficiencies, expansion of our voucher and public housing programs, acquisition of new workforce housing properties, and vital partnerships with social service and educational providers built a strong foundation for our response to the COVID-19 pandemic. In many ways, residents with federal housing subsidies are well-situated to remain housed even if they have lost their job due to the economic downturn. We have adjusted rents and taken other measures to ensure tenants do not fall behind on rent. Our partnerships with school districts and service providers have enabled us to rapidly build out meal-delivery programs, connect residents to services they need, and help families prepare for on-line learning for their children.

And just as the COVID-19 pandemic has reaffirmed the centrality of housing to our best aspirations as a just and equitable society, it has also reaffirmed the value of Moving to Work flexibility. HUD's efforts to provide waivers and operational flexibility to the broader universe of public housing authorities during the pandemic are commendable. The success that the industry has demonstrated in rising to the multiple operational challenges is largely attributable to these waivers. Necessity has shown an appropriate middle path that balances flexibility with accountability. These lessons should not be forgotten when the current crisis subsides and many of these waivers should be made permanent. They point to a better path forward for HUD, the industry, and the communities we serve.

Sincerely,

Stephen Norman
Executive Director

SECTION I

INTRODUCTION

A. OVERVIEW OF SHORT-TERM MTW GOALS AND OBJECTIVES

In 2019, King County Housing Authority (KCHA) focused on using our Moving to Work (MTW) flexibility to ensure that our federal housing assistance targeted households facing the greatest barriers, leveraged operational efficiencies that enable us to serve additional households, connected housing with supportive services, and expanded social impact initiatives that advance positive life outcomes among residents. During the year, KCHA:

- **INCREASED THE NUMBER OF EXTREMELY LOW-INCOME HOUSEHOLDS WE SERVE.**
  KCHA employed multiple strategies to expand our reach: property acquisitions; use of banked Annual Contributions Contract (ACC) authority; the lease-up of new incremental vouchers; issuing vouchers beyond HUD's Housing Choice Voucher (HCV) baseline; and the continuation of sponsor-based, flexible, and stepped subsidy programs for special populations. Our federally subsidized programs continued to surpass operational goals, allowing us to house 13,944 families in 2019.[1] The occupancy rate for our on-line owned units averaged 99.56% and the utilization rate for our HCV block grant never dropped below 100%, averaging 104%. Factoring in households served in KCHA's locally designed programs funded through our MTW flexibility, KCHA's 2019 utilization rate as calculated by HUD was 110% of baseline.

- **EXPANDEDED OUR PORTFOLIO OF HOUSING IN HIGH-OPPORTUNITY NEIGHBORHOODS.**
  KCHA continued to actively seek out property acquisitions in strategic areas of King County, including current and emerging high-opportunity neighborhoods and transit-oriented development sites, in order to ensure that low-income families can access the benefits these areas afford. In 2019, we acquired six properties, enabling us to add 1,356 units to our supply of affordable housing. Construction at the Highland Village property added 24 net new units to the inventory. By year's end, KCHA's portfolio had grown to 11,582 units, of which more than half are sited in high-opportunity neighborhoods.

- **FOSTERED PARTNERSHIPS THAT ADDRESSED THE MULTI-FACETED NEEDS OF THE DIVERSE LOW-INCOME POPULATIONS IN OUR REGION**.
  Nearly half of all households that entered our federally assisted programs in 2019 were experiencing

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[1] This number does not include the 3,397 port-in vouchers that we administered in 2019.

homelessness or living in temporary or emergency housing immediately prior to receiving KCHA assistance. Our programs serve a diverse population with varying needs: veterans exiting homelessness; individuals living with behavioral health needs; those with prior criminal justice system involvement; unaccompanied youth; youth experiencing homelessness or transitioning out of foster care; and families involved with the child welfare system. In 2019, KCHA was awarded one of the country's largest allocations of new special purpose vouchers, including: 67 Veterans Affairs Supportive Housing (VASH) vouchers for veterans exiting chronic homelessness and 198 Mainstream vouchers that target people with disabilities, many of whom are also experiencing homelessness. These additional 265 subsidies enable KCHA to expand our reach through cross-system efforts to combat housing instability and homelessness among some of the most marginalized in our community.

- **EXPANDED ASSISTANCE TO HOUSEHOLDS EXPERIENCING HOMELESSNESS THROUGH INNOVATIVE PROGRAMS.**
  Working closely with our service provider partners, KCHA continued to support innovative programs that utilize federal housing resources to address our region's homelessness crisis. In 2019, alongside our partners at Highline College, we began designing a new program targeting postsecondary students experiencing homelessness. This time-limited rental subsidy program, launched in early 2020, supports students through the duration of their academic program and six months following graduation. We also continued a cross-system collaborative partnership with the Department of Children, Youth, and Families (DCYF) and Catholic Community Services to provide an innovative supportive housing model that serves families involved in the child welfare system. Finally, with the addition of 198 new Mainstream vouchers, we were able to expand the Housing Access and Services Program (HASP), an almost two-decade partnership with King County's disability systems. Through HASP, KCHA is able to target our voucher resources to people with disabilities, enabling them to live independently in their community.

- **INCREASED GEOGRAPHIC CHOICE.**
  KCHA continued to use a multi-pronged approach to broaden our residents' geographic choices across King County. Strategies included: use of a six-tier, ZIP Code-based, payment standard system; outreach and engagement efforts by dedicated landlord liaisons; expedited inspections; deposit assistance; and targeted new property acquisitions and subsidy project-basing in high-opportunity communities. At the close of 2019, 30% of KCHA's HUD-subsidized households with children lived in high- or very high-opportunity neighborhoods, achieving our goal to reach this percentage by the

end of 2020. This past year, KCHA, in partnership with Seattle Housing Authority (SHA) and a national interdisciplinary research team headed by Harvard economist Raj Chetty, completed phase one of the Creating Moves to Opportunity (CMTO) initiative, a multi-year randomized control trial to identify and test effective strategies for expanding access to high-opportunity neighborhoods for families with young children. Results from this initial phase are promising — families that received CMTO services were 40% more likely to move into high-opportunity neighborhoods than the control group.

- **DEEPENED PARTNERSHIPS WITH LOCAL SCHOOL DISTRICTS TO IMPROVE EDUCATIONAL OUTCOMES.**
  More than 15,000 children lived in KCHA's federally subsidized housing during 2019. KCHA's strategies to support these children's academic success are the cornerstones of our efforts to prevent multi-generational cycles of poverty and promote long-term socioeconomic mobility. In 2019, we focused heavily on early-learning interventions to ensure that families living in KCHA housing or receiving a housing voucher are primed with information and supports that will enhance their children's cognitive development and, ultimately, their readiness for kindergarten. We began the program design and co-design process for a new pilot, Neighborhood Early Learning Connectors, that employs eight resident interns to connect KCHA families to local programming that supports healthy child development, and to promote pre-school and kindergarten registration by them. KCHA also continued to partner with families, school districts, and local education stakeholders across King County to advance other key outcomes, including housing and classroom stability, increased parental engagement, access to quality afterschool programs, mentorship opportunities, and high school graduation rates.

- **SUPPORTED FAMILIES IN GAINING GREATER ECONOMIC INDEPENDENCE**.
  During 2019, KCHA assisted 279 Public Housing and HCV households in the Family Self-Sufficiency (FSS) program and graduated 32 of these families from the program. The FSS program advances families toward economic independence through individualized case management, supportive services, and program incentives including a monthly contribution to an escrow account when a family experiences an increase in earned income. We also served an additional 83 families living in Public Housing through the Resident Opportunities and Self-Sufficiency (ROSS) program, which encourages housing authorities to develop local strategies that increase economic independence among residents.

- **INVESTED IN THE ELIMINATION OF ACCRUED CAPITAL REPAIR AND SYSTEM REPLACEMENT NEEDS IN OUR FEDERALLY SUBSIDIZED HOUSING INVENTORY.**
  In 2019, KCHA invested more than $17.5 million in major repairs to our federally subsidized housing stock, ensuring that quality housing options are available to low-income families for years to come. This investment improved resident safety, reduced maintenance costs and energy consumption, and extended the life expectancy of these affordable homes. Under our Energy Performance Contract, KCHA completed the work to upgrade aging elevators in our federally subsidized housing portfolio, investing $4.3 million in the replacement of hydraulic jacks, cabs, and electrical equipment at our properties for seniors and people with disabilities. The average Real Estate Assessment Center (REAC) score for KCHA's Public Housing inventory inspected in 2019 was 96.25.

- **REDUCED THE ENVIRONMENTAL IMPACT OF KCHA'S PROGRAMS AND FACILITIES.**
  In 2019, KCHA entered the third year of our five-year Resource Management Plan. The plan includes: goals for reduced energy and water consumption in the 11,582 units of housing that we own; increased diversion of materials from the waste stream; safe handling and reductions in hazardous waste; and the promotion of conservation awareness among our residents. In addition, KCHA almost doubled our solar capacity to 200 kilowatts, which is roughly equivalent to powering 180 homes.

- **STRENGTHENED OUR MEASUREMENT, LEARNING, AND RESEARCH CAPACITIES.**
  KCHA continued to leverage our internal capacity for program design and evaluation, and data management and analysis, while also expanding external partnerships that advance our long-term research agenda. In 2019, we continued implementation of the CMTO mobility study in collaboration with research partners from Harvard, Massachusetts Institute of Technology, Johns Hopkins, and other universities; began a research project with Johns Hopkins University to explore the effects of receiving housing assistance on health outcomes; continued collaborations with the University of Washington to understand the characteristics and experiences of residents moving with Housing Choice Vouchers (HCV); participated in a HUD-sponsored evaluation of the Family Unification Program (FUP) being conducted by the Urban Institute; and conducted internal assessments of several of our programs. These efforts support the MTW program's mission to pilot and assess new approaches that more effectively and efficiently address local housing needs and interrupt intergenerational cycles of poverty.

B. OVERVIEW OF LONG-TERM MTW GOALS AND OBJECTIVES

Through our participation in the MTW demonstration program, KCHA is able to address a wide range of affordable housing needs in the Puget Sound region. We use the single-fund and regulatory flexibility provided through MTW to support our overarching strategic goals:

- **STRATEGY 1:** Continue to strengthen the physical, operational, financial, and environmental sustainability of our portfolio of more than 11,500 affordable housing units.

- **STRATEGY 2:** Increase the supply of housing in the region that is affordable to extremely low-income households — those earning below 30% of Area Median Income (AMI) — through the development of new housing and the preservation of existing housing, as well as through expansion in the size and reach of our rental subsidy programs.

- **STRATEGY 3:** Affirmatively Further Fair Housing and provide greater geographic choice for low-income households, including residents with disabilities, elderly residents with mobility impairments, and families with young children, so that more of our residents have the opportunity to live in neighborhoods with high-performing schools and convenient access to support services, health care, transit, and employment.

- **STRATEGY 4:** Coordinate closely with behavioral health and other social services systems to increase the supply of supportive housing for people who have experienced chronic homelessness and/or have special needs, with the goal of making homelessness rare, brief, and one-time in King County.

- **STRATEGY 5:** Engage in the revitalization of King County's low-income neighborhoods, with a focus on housing and other services, amenities, institutions, and partnerships that create strong, healthy communities.

- **STRATEGY 6:** Work with King County government, regional transit agencies and suburban cities to support sustainable and equitable regional development by integrating new affordable housing into regional growth corridors aligned with current and planned mass transit investments.

- **STRATEGY 7:** Expand and deepen partnerships with local school districts, Head Start programs, after-school program providers, public health departments, community colleges, the philanthropic community, and our residents, with the goal of improving educational and life outcomes for the low-income children and families we serve.

- **STRATEGY 8:** Promote greater economic independence for families and individuals living in

subsidized housing by addressing barriers to employment and facilitating access to training and education programs, with the goal of enabling moves to market-rate housing at the appropriate time.

- **STRATEGY 9:** Continue to develop institutional capacity and efficiencies at KCHA to make the most effective use of federal resources.

- **STRATEGY 10:** Continue to reduce KCHA's environmental footprint through energy conservation, renewable energy generation, waste stream diversion, green procurement policies, water usage reduction, and fleet management practices.

- **STRATEGY 11:** Develop our capacity as a learning organization that incorporates research and evaluation in decision-making and policy formulation.

SECTION II

GENERAL HOUSING AUTHORITY OPERATING INFORMATION

A. HOUSING STOCK INFORMATION

i. Actual New Project-based Vouchers

Property Name	Planned Number of Vouchers	Actual Number of Vouchers	Status at End of 2019	RAD?	Description of Project
Kent Permanent Supportive Housing	80	80	Committed	No	Permanent supportive housing targeting veterans exiting homelessness and individuals with disabilities. Catholic Community Services is the project owner. At the close of 2019, the project was under an Agreement to Enter into a Housing Assistance Payments (AHAP) contract and construction on the project was underway. Initial occupancy is projected to begin December 2020.
30Bellevue	28	31	Leased/Issued	No	Affordable housing for low-income and formerly homeless families with children. Imagine Housing is the project owner. At the close of 2019, the project was under a Housing Assistance Payments (HAP) contract for a total of 31 units. This increase was made possible by KCHA's 2018 award of 99 new Mainstream vouchers.
Esterra	8	8	Committed	No	Supportive housing for families exiting homelessness. Imagine Housing is the project owner. At the close of 2019, the project was under an AHAP contract and construction was underway. Initial occupancy is projected to begin December 2020.
New Arcadia	5	5	Committed	No	Supportive housing for young adults (ages 18-24) exiting homelessness. These subsidies serve 15 youth in five 3-bedroom units. Nexus Youth and Families is the project owner. At the close of 2019, the project was under AHAP and construction was underway. Initial occupancy began May 2020. Since the submission of the 2019 MTW Plan, Nexus has entered into a collaborative agreement with the YMCA, which will be the managing member of the LLC that operates New Arcadia.

Renton Commons	26	26	Leased/Issued	No	12 units of supportive housing for families exiting homelessness and 14 VASH units serving veterans exiting homelessness and their families. The Low Income Housing Institute is the project owner. By the close of 2019, the project was under a HAP contract.
Shoreline Veterans Center	0	25	Leased/Issued	No	These 25 vouchers were awarded as part of the 2018 King County Combined Funders NOFA. The Shoreline Veterans Center, operated by Compass, is an existing housing project that serves veterans exiting homelessness.
YMCA Shared Housing	0	2	Leased/Issued	No	In October 2019, KCHA entered into a HAP contract with the YMCA to serve up to 10 young adults exiting the foster care system through FUP voucher assistance.
Somerset Gardens	0	8	Leased/Issued	No	In May 2019, KCHA entered into a HAP contract for eight units at KCHA's Somerset Gardens, which serves low-income families.
King County Combined Funders NOFA	Up to 50	See Shoreline Veterans Center	Committed	No	KCHA, in coordination with other local funders, will provide up to 50 project-based vouchers for projects serving veterans experiencing homelessness and their families, and other families experiencing homelessness in a supportive housing environment. Through the 2018 NOFA process, KCHA awarded 25 vouchers to the Shoreline Veterans Center project, detailed above.
Total Vouchers Newly Project-based	**Up to 197**	**185**			

ii. Actual Existing Project-based Vouchers

See Appendix C for a list of KCHA's existing project-based voucher contracts.

iii. Actual Other Changes to the Housing Stock in 2019

In 2019, KCHA purchased Emerson Apartments, Hampton Greens, Juanita View, Kendall Ridge, Kirkland Heights, and Riverstone, adding 1,356 units to our inventory of affordable housing. Another 24 net new units were added to the inventory as part of the substantial rehabilitation of Highland Village. The Northwood Square property was converted to public housing utilizing banked ACC authority. At the end of the year, KCHA's inventory stood at 11,582 units.

iv. General Description of Actual Capital Fund Expenditures During 2019

KCHA continued to improve the quality and long-term viability of our aging affordable housing inventory by investing more than $17.5 million in capital repairs, unit upgrades, capital construction, and non-routine maintenance to our HUD-subsidized properties. These investments ensure that our housing stock is available and livable for years to come.

- **UNIT UPGRADES ($4.08 MILLION).** In 2019, KCHA continued our ongoing efforts to significantly upgrade the interiors of our affordable housing inventory as units turn over. KCHA's in-house, skilled workforce performed the renovations, which included installation of new flooring, cabinets, and fixtures that extended the useful life of 135 additional units by 20 years.

- **SITE IMPROVEMENTS ($1.8 MILLION).** Site improvements at Forest Glen (Redmond) included the installation of new site lighting, walkways, handrails, and a pedestrian bridge; repaving of parking lots; and improvements to the storm water drainage system.

- **BUILDING ENVELOPE AND RELATED COMPONENTS UPGRADES ($4.6 MILLION).** New roofs were installed at Casa Juanita (Kirkland), Kirkland Place (Kirkland), Lake House Apartments (Shoreline), and Wayland Arms (Auburn). College Place (Bellevue) and Northwood Square (Auburn) received new roofs, siding, doors, and windows. Decks and windows were replaced at Northlake House (Bothell) and the building was painted. Envelope work planned for Houghton Properties (Kirkland) was rescheduled to 2020 to allow time for the design of a new second floor on one building's wing, converting four one-bedroom units to three-bedroom units.

- **DOMESTIC WASTE AND WATER LINE WORK ($700,000).** The waste lines at Wayland Arms Apartments (Auburn) and Southridge House (Federal Way) were lined. At properties such as these, where the main lines are located in the concrete slab, technicians are able to deploy this lining technique as an alternative to opening the floor to replace lines, thus minimizing disruption to tenants. The work planned for the Parkway Apartments (Redmond) was delayed as other financing options were explored.

- **"509" INITIATIVE IMPROVEMENTS ($2.1 MILLION).** Improvements planned for the properties included in the 2013 conversion of 509 scattered site Public Housing properties were completed in 2019. Eastridge House (Issaquah) received a new roof. Envelope upgrades including roofs, siding, doors, and windows were completed at Greenleaf Apartments (Kenmore) and Juanita Trace (Kirkland). At Kings Court (Federal Way), the waste lines were lined and the water lines were replaced. The waste lines at Youngs Lake Commons (Renton) are deteriorated and require complete

replacement. Since the project will require the temporary relocation of residents, a decision was made to also upgrade the unit interiors. In order to plan for this larger scope of work, the project is scheduled to take place in 2020.

- **ELEVATOR IMPROVEMENTS ($4.3 MILLION).** Elevator improvements were completed at KCHA properties serving seniors and people with disabilities. Funded through KCHA's Energy Performance Contract (EPC), the project included the replacement of hydraulic jacks, the installation of new energy efficient controls, and the refurbishment of elevator cabs. Elevators at the following sites were included in the project: Briarwood (Shoreline), Brittany Park (Normandy Park), Casa Juanita (Kirkland), Casa Madrona (Olympia), Gustaves Manor (Auburn), Lake House (Shoreline), Mardi Gras (Kent), Northridge I and II (Shoreline), Paramount House (Shoreline), Riverton Terrace (Tukwila), Southridge (Federal Way), Wayland Arms (Auburn), Westminster Manor (Shoreline), and Yardley Arms (Burien).

B. LEASING INFORMATION

i. Actual Number of Households Served[2]

Over the course of 2019, KCHA served nearly 14,000 households through a combination of our traditional federal housing programs, Public Housing and HCV, and locally designed, non-traditional programs. These local, non-traditional programs included sponsor-based supportive housing for individuals experiencing chronic homelessness, stepped rent for young adults exiting homelessness, and school-based subsidies targeting schoolchildren and their families, and community college students experiencing homelessness.

Number of Households Served Through:	Number of Unit Months Occupied/Leased		Number of Households Served	
	Planned	Actual	Planned	Actual
MTW Public Housing Units Leased	29,160	30,828	2,430	2,569
MTW Housing Choice Vouchers (HCV) Utilized	120,588	134,484	10,049[3]	11,207[4]
Local, Non-traditional: Tenant-based	2,160	2,016	180	168
Local, Non-traditional: Property-based	N/A	N/A	N/A	N/A
Local, Non-traditional: Homeownership	N/A	N/A	N/A	N/A
Planned/Actual Totals	**151,908**	**167,328**	**12,659**	**13,944**

Local, Non-traditional Category	MTW Activity Number/Name	Number of Unit Months Occupied/Leased		Number of Households Served	
		Planned	Actual	Planned	Actual
Tenant-based	Activity 2014-1: Stepped Down Assistance for Homeless Youth	300	276	25	23
Tenant-based	Activity 2013-2: Flexible Rental Assistance	720	588	60	49
Tenant-based	Activity 2007-6: Develop a Sponsor-based Housing Program	1,140	1,152	95	96
Planned/Actual Totals		**2,160**	**2,016**	**180**	**168**

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[2] These numbers reflect a cumulative count of the total number of households served between January 1 and December 31, 2019. This number does not include the 3,397 port-in vouchers that we administered in 2019.

[3] KCHA previously had projected this number as a point in time, which does not capture the dynamics of turnover and port-out voucher absorption that take place over the course of a year.

[4] This number includes both block grant and special purpose voucher households.

ii. Description of Any Issues and Solutions Related to Leasing

Housing Program	Description of Leasing Issues and Solutions
Public Housing	The program did not encounter leasing issues in 2019.
Housing Choice Vouchers (HCV)	King County continues to have one of the most competitive rental markets in the nation. Despite this, KCHA maintained our shopping success rate because of the innovative policies, practices, and additional supports we have put into place to aid voucher holders in leasing up. First, we continued to use a tiered ZIP Code-based payment standard system that more closely matches area submarkets, reducing economic barriers to housing. We also continued to provide deposit assistance to searching households. The assignment of HCV staff caseloads by ZIP Code provided landlords with a single and consistent point of contact that improved customer service and satisfaction. In 2019, KCHA executed a Memorandum of Understanding with Housing Connector, a new organization in King County that partners with property owners to streamline access to rental units for people experiencing homelessness, including KCHA's special purpose voucher populations. Also in 2019, our Landlord Liaison team continued to explore additional measures to support voucher holders in securing a home, including: unit holding fees; expedited lease-up processes; and flexible funding to assist participants with back rent and utilities, application fees, and deposits. For families that received their vouchers in 2019, their shopping success rate was 75% at 240 days of searching.
Local, Non-traditional	Successfully leasing an apartment and maintaining housing stability in a tight rental market with a population that already faces multiple barriers remained a challenge for our local, non-traditional programs in 2019. Working closely with our community partners, including the new relationship with Housing Connector, we continued to explore additional avenues to overcome barriers to landlord engagement, including housing search navigation and advocacy services, and housing stability supports aimed to improve shopping success rates and landlord receptivity to these programs.

C. WAIT LIST INFORMATION

i. Waiting List Information at End of 2019

Waiting List Name	Description	Number of Households on Waiting List	Waiting List Open, Partially Open, or Closed	Was the Waiting List Opened During 2019?
Housing Choice Voucher	Community-wide	480	Closed	No
Public Housing	Other: Regional	7,327	Open	Yes
Public Housing	Site-based	7,199	Open	Yes
Project-based	Other: Regional	4,048	Open	Yes
Public Housing - Conditional Housing	Program-specific	34	Open	Yes

ii. Changes to the Waiting List in 2019

KCHA did not make any changes to our waiting lists in 2019.

D. INFORMATION ON STATUTORY OBJECTIVES AND REQUIREMENTS

i. 75% of Families Assisted Are Very Low-income

Income Level	Number of Local, Non-Traditional Households Admitted in 2019
50%-80% Area Median Income	5
30%-49% Area Median Income	26
Below 30% Area Median Income	72

ii. Maintain Comparable Mix

Baseline Mix of Family Sizes Served (Upon Entry to MTW)

Family Size	Occupied Public Housing Units	Utilized HCVs	Non-MTW Adjustments	Baseline Mix Number	Baseline Mix Percentage
1 Person	1,201	1,929	N/A	3,130	34.05%
2 Person	674	1,497	N/A	2,171	23.62%
3 Person	476	1,064	N/A	1,540	16.75%
4 Person	360	772	N/A	1,132	12.32%
5 Person	250	379	N/A	629	6.84%
6+ Person	246	344	N/A	590	6.42%
Total	3,207	5,985	N/A	9,192	100%

Explanation for Baseline Adjustments	KCHA did not make any adjustments to our baseline mix of family sizes served.

Mix of Family Sizes Served[5]

	1 Person	2 Person	3 Person	4 Person	5 Person	6+ Person	Totals
Baseline Mix Percentage	34.05%	23.62%	16.75%	12.32%	6.84%	6.42%	100%
Number of Households Served in 2019	6,136	3,199	1,738	1,229	734	740	13,776
Percentages of Households Served in 2019	44.54%	23.22%	12.62%	8.29%	5.33%	5.37%	100%
Percentage Change	10.49%	-0.40%	-4.13%	-3.40%	-1.51%	-1.05%	0%
Justification and Explanation for Any Variances of Over 5% from the Baseline Percentages	For more than a decade, KCHA has been an active partner in addressing our region's homelessness crisis and has aggressively pursued new incremental special purpose vouchers being made available by HUD. A large portion of these vouchers target veterans exiting homelessness and households headed by a person with a disability — populations largely comprised of single adults. According to the most recent point-in-time count, more than three-quarters of individuals experiencing homelessness were living in single adult households.[6] KCHA's family mix has shifted accordingly over time.						

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[5] This table does not include the 168 households served through KCHA's local, non-traditional programs.
[6] Count Us In 2019: Seattle/King County Point-in-Time Count of Persons Experiencing Homelessness. http://allhomekc.org/wp-content/uploads/2019/09/KING-9.5-v2.pdf

iii. Number of Households Transitioned to Self-sufficiency by Fiscal Year-end

Activity Name/#	Number of Households Transitioned	Agency Definition of Self-sufficiency
Stepped-down Assistance for Homeless Youth (2014-1)	13	Maintain housing
Passage Point Re-entry Housing Program (2013-1)	7	Positive move to Public Housing or other independent housing
EASY & WIN Rent (2008-10, 2008-11)	195	Positive move from KCHA to unsubsidized housing
Develop a Sponsor-based Housing Program (2007-6)	82	Maintain housing
Households Duplicated Across Activities/Definitions	0	
ANNUAL TOTAL NUMBER OF HOUSEHOLDS TRANSITIONED TO SELF-SUFFICIENCY	**297**	

In 2019, 297 households in KCHA's federally subsidized housing programs achieved self-sufficiency milestones. Of those, 195 achieved self-sufficiency by moving to non-subsidized housing and 102 maintained stable housing after experiencing homelessness or incarceration.

SECTION III
PROPOSED MTW ACTIVITIES

New activities are proposed in the annual MTW Plan.

SECTION IV

APPROVED MTW ACTIVITIES

A. IMPLEMENTED ACTIVITIES

The following table provides an overview of KCHA's implemented activities, the statutory objectives they aim to meet, and the page number in which more detail can be found for each.

Year-Activity #	MTW Activity	Statutory Objective(s)	Page Number
2019-1	Acquire and Develop New Affordable Housing	Housing Choice	19
2018-1	Encouraging the Successful Lease-up of the Housing Choice Voucher Program	Housing Choice	19
2016-2	Conversion of Former Opt-out Developments to Public Housing	Cost-effectiveness	21
2015-2	Reporting on the Use of Net Proceeds from Disposition Activities	Cost-effectiveness	22
2014-1	Stepped-down Assistance for Homeless Youth	Self-sufficiency	23
2014-2	Revised Definition of "Family"	Housing Choice	25
2013-1	Passage Point Re-entry Housing Program	Housing Choice	26
2013-2	Flexible Rental Assistance	Housing Choice	27
2009-1	Project-based Section 8 Local Program Contract Term	Housing Choice	28
2008-1	Acquire New Public Housing	Housing Choice	29
2008-10 & 2008-11	EASY and WIN Rent Policies	Cost-effectiveness Self-sufficiency	30
2008-21	Public Housing and Housing Choice Voucher Utility Allowances	Cost-effectiveness	32
2007-6	Develop a Sponsor-based Housing Program	Housing Choice	33
2007-14	Enhanced Transfer Policy	Cost-effectiveness	34
2005-4	Payment Standard Changes	Housing Choice	35
2004-2	Local Project-based Section 8 Program	Cost-effectiveness Housing Choice	37
2004-3	Develop Site-based Waiting Lists	Cost-effectiveness Housing Choice	40
2004-5	Modified Housing Quality Standards (HQS) Inspection Protocols	Cost-effectiveness	41
2004-7	Streamlining Public Housing and Housing Choice Voucher Forms and Data Processing	Cost-effectiveness	42
2004-9	Rent Reasonableness Modifications	Cost-effectiveness	44
2004-12	Energy Performance Contracting	Cost-effectiveness	45
2004-16	Housing Choice Voucher Occupancy Requirements	Cost-effectiveness	46

ACTIVITY 2019-1: ACQUIRE AND DEVELOP NEW AFFORDABLE HOUSING

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2019
IMPLEMENTED: 2019

CHALLENGE: King County continues to experience extraordinary population growth. With escalating rents — especially in historically more affordable neighborhoods — and the failure of wages to keep pace with rising housing costs, many families are struggling to pay rent and an unprecedented number are experiencing homelessness.

SOLUTION: KCHA's primary mission is to preserve and expand housing options for low-income families utilizing all available funding and financing tools. To expand existing efforts, we are leveraging MTW funds to support the development or acquisition of non-federally subsidized affordable housing that includes, but is not limited to, properties also leveraging Low Income Housing Tax Credits (LIHTC). While traditional third-party debt can support a significant portion of total development or acquisition costs, it generally is not sufficient to finance the full cost of these projects. This financing gap can be mitigated in whole or in part by using MTW funds for development, acquisition, financing, or renovation costs, in accordance with PIH Notice 2011-45. We anticipate that such funding may be structured as an internal loan or an equity contribution to the development.

PROGRESS AND OUTCOMES: KCHA did not use any MTW funds to support our development activities in 2019.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Increase Housing Choice	HC #1: Additional units of housing made available	0 units	168 units	0 units	In Progress

ACTIVITY 2018-1: Encouraging the Successful Lease-up of the Housing Choice Voucher Program

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2018
IMPLEMENTED: 2018

CHALLENGE: King County's rental vacancy rate, currently at a historic low, coupled with the large in-migration of an affluent and skilled workforce, make it difficult for KCHA's voucher holders to compete in the private market.

SOLUTION: KCHA is working to preserve and increase the number of housing options available by recruiting and retaining landlords in the HCV program. In order to secure units, KCHA is exploring the implementation of incentive payments to landlords who agree to lease a recently vacated unit to another voucher holder, in an amount not to exceed one month of the Housing Assistance Payment (HAP). These payments will serve as an incentive for landlords to continue their participation in the HCV program by minimizing the owner's losses typically experienced during turnover. KCHA also streamlines our Housing Quality Standards (HQS) protocol even further by allowing landlords to inspect and self-certify that the unit passes HUD's standards. A full description of the MTW-modified HQS inspection protocol can be found in Activity 2004-5: Modified Housing Quality Standards (HQS) Inspection Protocols.

In addition to strategies to improve landlord recruitment and retention, KCHA will continue to invest in strategies to aid voucher holders in leasing a unit in the geographic location of their choice. Examples of previously implemented activities include providing access to a security deposit assistance fund; use of multi-tiered, ZIP Code-based payment standards; and continuing to focus on landlord customer service. In addition, KCHA continues to support and participate in the Creating Moves to Opportunity (CMTO) research partnership, which tests new strategies that assist families with young children to access and move to high-opportunity neighborhoods. To aid in the implementation of this project, KCHA may modify tenant selection priorities in order to increase the rate at which families with children are selected from the HCV wait list and effectively target the intended service population for the CMTO project.

PROGRESS AND OUTCOMES: In 2019, KCHA's shopping success rate was 75% at 240 days of searching.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	$0 saved	$0 saved	Achieved
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours[7]	0 hours saved	0 hours saved	0 hours saved	Achieved
Increase housing choices	HC #7: Number of households receiving services aimed to increase housing choice	Shopping Success Rate: 70% at 240 days	80% at 240 days	75% at 240 days	In Progress

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[7] This activity does not save staff hours or other resources.

ACTIVITY 2016-2: Conversion of Former Opt-out Developments to Public Housing

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness
APPROVAL: 2016
IMPLEMENTED: 2016

CHALLENGE: The process to convert a property's subsidy model from project-based Section 8 to Public Housing is slow, burdensome, and administratively complex.

SOLUTION: This policy allows KCHA to convert entire project-based Section 8 opt-out properties to Public Housing at once. Under current federal guidelines, units convert only when the original resident moves out with a voucher. This transition is gradual, and at properties that house seniors or people with disabilities, turnover of units tends to be especially slow. In the meantime, two sets of rules — project-based Section 8 and Public Housing — simultaneously govern the management of the development, adding to the administrative complexity of providing housing assistance.

This activity builds on KCHA's previously approved initiative (2008-1) to expand housing through use of banked Public Housing ACC units. KCHA can convert former project-based "opt-out" sites to Public Housing through the development process outlined in 24 CFR 905 rather than through the typical gradual transition. As a result, this policy greatly streamlines operations and increases administrative efficiency.

With transition to Public Housing subsidy, current enhanced voucher participants retain protections against future rent increases in much the same manner as previously provided. As Public Housing residents, these households pay an affordable rent (based on policies outlined in KCHA's Public Housing Admissions and Continued Occupancy Policy [ACOP]) and therefore remain protected from a private owner's decision to increase the contract rent. At the same time, KCHA's MTW-enhanced Transfer Policy ensures that former enhanced voucher recipients retain the same (if not greater) opportunity for mobility by providing access to transfer to other subsidized units within KCHA's portfolio or use a general HCV should future need arise.

KCHA works with affected residents of selected former opt-out properties, providing ample notification and information (including the right to move using a general voucher for current enhanced voucher participants) in order to ensure the development's seamless transition to the Public Housing program.

PROGRESS AND OUTCOMES: KCHA converted Northwood Square, a 24-unit family property located in Auburn, to Public Housing in July 2019.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	$1,320[8] saved	Estimated $1,320 saved	Achieved
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 hours saved	40 hours saved	Estimated 40 hours saved	Achieved

ACTIVITY 2015-2: Reporting on the Use of Net Proceeds from Disposition Activities

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness
APPROVAL: 2015
IMPLEMENTED: 2016

CHALLENGE: The reporting process for the use of net proceeds from KCHA's disposition activities is duplicative and burdensome. The reporting protocol for the MTW program aligns with the Section 18 disposition code reporting requirements, allowing for an opportunity to simplify this process.

SOLUTION: KCHA reports on the use of net proceeds from disposition activities in the annual MTW report. This streamlining activity allows us to realize time savings and administrative efficiencies while continuing to adhere to the guidelines outlined in 24 CFR 941 Subpart F of Section 18 demolition and disposition code.

We use our net proceeds from the last HOPE VI disposition, Seola Gardens, in some of the following ways, all of which are accepted uses under Section 18(a)(5):

1. Repair or rehabilitation of existing ACC units.

2. Development and/or acquisition of new ACC units.

3. Provision of social services for residents.

4. Implementation of a preventative and routine maintenance strategy for specific single-family scattered-site ACC units.

5. Modernization of a portion of a residential building in our inventory to develop a recreation room, laundry room, or day-care facility for residents.

6. Leveraging of proceeds in order to partner with a private entity for the purpose of developing mixed-finance Public Housing under 24 CFR 905.604.

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[8] This figure was calculated by multiplying the median hourly wage and benefits ($33) of staff who oversee this activity by the number of hours saved. The number is a monetization of the hours saved through the implementation of this program.

We report on the proceeds' uses, including administrative and overhead costs, in the MTW reports. The net proceeds from this project are estimated to be $5 million.

PROGRESS AND OUTCOMES: KCHA did not use any net proceeds in 2019.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	Estimated $11,840[9] saved	Estimated $11,840 saved	Achieved
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 hours saved	Estimated 160 hours saved	Estimated 160 hours saved	Achieved

ACTIVITY 2014-1: Stepped-down Assistance for Homeless Youth

MTW STATUTORY OBJECTIVE: Increase Self-sufficiency
APPROVAL: 2014
IMPLEMENTED: 2014

CHALLENGE: During the January 2019 point-in-time homeless count in King County, 1,089 unaccompanied youth and young adults were identified as experiencing homelessness or an unstable housing situation.[10] Local service providers have identified the need for a short-term, gradually diminishing rental subsidy structure to meet the unique needs of these youth.

SOLUTION: KCHA has implemented a flexible, "stepped-down" rental assistance model in partnership with local youth service providers. Our provider partners find that a short-term rental subsidy, paired with supportive services, is the most effective way to serve youth experiencing homelessness, as a majority of them do not require extended tenure in a supportive housing environment. By providing limited-term rental assistance and promoting graduation to independent living, more youth can be served effectively. KCHA is partnering with Valley Cities Counseling and Consultation (VCCC) to operate the Coming Up initiative. This program offers independent housing opportunities to young adults (ages 18 to 25) who are either exiting homelessness or currently living in service-rich transitional housing. With support from the provider, participants move into housing in the private rental market, sign a

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[9] This figure was calculated by multiplying the median hourly wage and benefits ($74) of the staff member who oversees this activity by the number of hours saved. This number represents a hypothetical estimate of the dollar amount that could be saved in staff hours by implementing this activity.
[10] Count Us In 2019: Seattle/King County Point-in-Time Count of Persons Experiencing Homelessness. http://allhomekc.org/wp-content/uploads/2019/09/KING-9.5-v2.pdf.

lease, and work with a resource specialist who prepares them to take over the lease after a period of being stabilized in housing.

PROGRESS AND OUTCOMES: As the rental market continues to be competitive and rents escalate at an unprecedented rate across King County, VCCC is experiencing significant challenges locating landlords who are willing to lease units for the Coming Up program. As a result, VCCC and KCHA are currently exploring a shift of the housing modality to a project-based voucher model to ensure the program remains an effective and viable housing option for young adults experiencing homelessness in King County. If this change is made, KCHA and VCCC will explore the feasibility of retaining the stepped rent model in the project-based voucher context.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Increase self-sufficiency	SS #1: Average earned income of households affected by this policy	$0/month	$200/month	$777/month	Exceeded
Increase self-sufficiency	SS #3: Employment status for heads of household	(1) Employed Full-time			Partially Achieved
		0 participants	4 participants	11 participants	
		(2) Employed Part-time			
		0 participants	7 participants	0 participants	
		(3) Enrolled in an Educational Program			
		0 participants	4 participants	0 participants	
		(4) Enrolled in Job-training Program			
		0 participants	1 participant	0 participants	
		(5) Unemployed			
		0 participants	0 participants	5 participants	
		(6) Other			
		0 participants	0 participants	0 participants	
Increase self-sufficiency	SS #5: Number of households receiving services	0 households	25 households	23 households	Partially Achieved
Increase self-sufficiency	SS #7: Tenant rent share	0 households	7 households paying $200 or more toward contract rent	7 households paying $200 or more toward contract rent	Achieved

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Increase self-sufficiency	SS #8: Households transition to self-sufficiency[11]	0 households	14 households	13 households	Partially Achieved

ACTIVITY 2014-2: Revised Definition of "Family"

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2014
IMPLEMENTED: 2014

CHALLENGE: According to the January 2019 point-in-time count, 2,451 individuals experiencing homelessness in King County were in families with children.[12] Thousands more seniors and people with disabilities, many with severe rent burdens, are experiencing homelessness or on our waiting lists.

SOLUTION: This policy directs KCHA's limited resources to populations facing the greatest need: elderly and near-elderly households; households with people with disabilities; and families with minor children. We modified the eligibility standards outlined in the Public Housing ACOP and HCV Administrative Plans to limit eligible households to those that include at least one senior or person with a disability, or a minor/dependent child. The current policy affects only admissions and does not affect the eligibility of households currently receiving assistance. Exceptions will be made for participants in programs that target specialized populations, such as victims of domestic violence or individuals who have experienced chronic homelessness.

PROGRESS AND OUTCOMES: KCHA continued to apply this policy to new applicants, sustaining a reduced HCV wait list time of 20 months.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Increase housing choices	HC #3: Average applicant time on HCV wait list (in months)	29 months	25 months	20 months	Exceeded
Increase housing choices	HC #4: Number of households at or below 80% AMI that would lose assistance or need to move	0 households	0 households	0 households	Achieved

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[11] Self-sufficiency for this activity is defined as securing and maintaining housing.
[12] Count Us In 2019: Seattle/King County Point-in-Time Count of Persons Experiencing Homelessness. http://allhomekc.org/wp-content/uploads/2019/09/KING-9.5-v2.pdf.

ACTIVITY 2013-1: Passage Point Re-entry Housing Program

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2013
IMPLEMENTED: 2013

CHALLENGE: In 2019, 1,486 individuals in King County returned to the community after a period of incarceration.[13] Nationally, more than half of all inmates are parents who will face barriers to securing housing and employment upon release due to their criminal record or lack of job skills.[14] Without a home or employment, many of these parents are unable to reunite with their children.

SOLUTION: Passage Point is a unique supportive housing program that serves parents trying to reunify with their children following a period of incarceration. KCHA provides 46 project-based Section 8 vouchers while the YWCA provides property management and supportive services. The YWCA performs outreach to prisons and correctional facilities to identify eligible individuals. In contrast to typical transitional housing programs that have strict 24-month occupancy limits, Passage Point participants may remain in place until they have completed the family reunification process, are stabilized in employment, and can demonstrate their ability to succeed in a less service-intensive environment. Passage Point participants who complete the program and regain custody of their children may apply to KCHA's Public Housing program and receive priority placement on the wait list.

PROGRESS AND OUTCOMES: In 2019, 46 families lived and participated in services at Passage Point. By the end of the year, seven of these families had graduated to permanent housing.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #4: Amount of funds leveraged in dollars	$0	$500,000	$701,945	Exceeded
Increase housing choices	HC #5: Number of households able to move to a better unit[15]	0 households	40 households	46 households	Exceeded
Increase housing choices	HC #7: Number of households receiving services aimed to increase housing choice	0 households	40 households	46 households	Exceeded

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[13] Washington State Department of Corrections. Number of Prison Releases by County of Release. https://www.doc.wa.gov/docs/publications/reports/200-RE001.pdf.
[14] Glaze, L E and Maruschak, M M (2008). Parents in Prison and Their Minor Children. http://www.bjs.gov/index.cfm?ty=pbdetail&iid=823
[15] Better unit is defined as stable housing.

Increase self-sufficiency	SS #1: Average earned income of households affected by this policy	$0	$3,584	$7,520	Exceeded
Increase self-sufficiency	SS #3: Employment status for heads of household	(1) Employed Full-time 0	15	11	Partially Achieved
		(2) Employed Part-time 0	15	19	
		(3) Enrolled in an Educational Program 0	15	6	
		(4) Enrolled in Job Training Program 0	12	5	
		(5) Unemployed 0	0	11	
		(6) Other: engaged in services 0	0	8	
Increase self-sufficiency	SS #8: Number of households transitioned to self-sufficiency[16]	0 households	5 households	7 households	Exceeded

ACTIVITY 2013-2: Flexible Rental Assistance

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2013
IMPLEMENTED: 2013

CHALLENGE: The one-size-fits-all approach of traditional housing programs does not provide the flexibility needed to quickly and effectively meet the needs of low-income individuals facing distinct housing crises. In many of these cases, a short-term rental subsidy paired with responsive, individualized case management can help a family out of a crisis situation and into safe and stable housing.

SOLUTION: This activity, developed with local service providers, offers tailored flexible housing assistance to families and individuals in crisis. KCHA provides flexible financial assistance, including time-limited rental subsidy, security deposits, rent arrears, and funds to cover move-in costs, while our partners provide individualized support services. The Student and Family Stability Initiative (SFSI) pairs short-term rental assistance with housing navigation and employment services for families experiencing

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[16] Self-sufficiency in this activity is defined as graduating to Public Housing or other independent housing.

or on the verge of homelessness. School-based McKinney-Vento liaisons identify and connect these families with community-based service providers while caseworkers have the flexibility to determine the most effective approach to quickly stabilize participants in housing.

PROGRESS AND OUTCOMES: The competitive private rental market, rapidly escalating rents, and the service provider's capacity limitations accounted for the decrease in program outcomes in 2019.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Increase housing choices	HC #5: Number of households able to move to a better unit	0 households	50 households	49 households	Partially Achieved
Increase housing choices	HC #7: Number of households receiving services aimed to increase housing choice	0 households	100 households	62 households	Partially Achieved

ACTIVITY 2009-1: Project-based Section 8 Local Program Contract Term

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2009
IMPLEMENTED: 2009

CHALLENGE: Prior to 2009, our nonprofit development partners faced difficulties securing private financing for the development and acquisition of affordable housing projects. Measured against banking and private equity standards, the Housing Assistance Payments (HAP) contract term set by HUD is too short and hinders underwriting debt on affordable housing projects.

SOLUTION: This activity extends the allowable term for Project-based Section 8 contracts up to 30 years for the initial HAP term and a 30-year cumulative maximum contract renewal term not to exceed 60 years total. The longer term assists our partners in underwriting and leveraging private financing for development and acquisition projects. At the same time, the longer-term commitment from KCHA signals to lenders and underwriters that proposed projects have sufficient cash flow to take on the debt necessary to develop or acquire affordable housing units.

PROGRESS AND OUTCOMES: KCHA continued to save 20 hours of staff time per contract.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	$880 saved	$880 saved per contract[17]	Achieved
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 hours saved per contract	20 hours saved per contract	20 hours saved per contract	Achieved

ACTIVITY 2008-1: Acquire New Public Housing

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2008
IMPLEMENTED: 2008

CHALLENGE: In King County, 40% of households earning less than 80% of AMI pay more than 50% of their income each month on rent and utilities. For the lowest income families in our region, those earning less than 30% of AMI, a staggering 65% are paying more than half of their income on rent.[18] In the context of these challenges, KCHA's Public Housing wait lists continue to grow. Given the gap between available affordable housing and the number of low-income renters, KCHA must continue to increase the inventory of units affordable to extremely low-income households.

SOLUTION: KCHA's Public Housing ACC is currently below the Faircloth limit in the number of allowable units. These "banked" Public Housing subsidies allow us to add to the affordable housing supply in the region by acquiring new units. This approach is challenging, however, because Public Housing units cannot support debt. We continued our innovative use of MTW working capital, with a particular focus on the creation or preservation of units in high-opportunity neighborhoods.[19]

We further simplify the acquisition and addition of units to our Public Housing inventory by partnering with the local HUD field office to streamline the information needed to add these units to the PIH Information Center system and obtain operating and capital subsidies. We also use a process for self-certification of neighborhood suitability standards and Faircloth limits, necessitating the flexibility granted in Attachment D, Section D of our MTW Agreement.[20]

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[17] This figure was calculated by multiplying the median hourly wage and benefits ($44) of the staff member who oversees this activity by the number of hours saved. The number is a monetization of the hours saved through the implementation of this program.
[18] 2018 one-year ACS estimates.
[19] Neighborhood opportunity designations are from the Puget Sound Regional Council and Kirwan Institute's Opportunity Mapping index (https://www.psrc.org/opportunity-mapping).
[20] Some Public Housing units might be designated MTW Neighborhood Services units over this next year upon approval from the HUD field office.

PROGRESS AND OUTCOMES: KCHA converted Northwood Square, a 24-unit family property located in Auburn, to Public Housing in July 2019.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Increase housing choices	HC # 1: Number of new housing units made available for households at or below 80% AMI	0 units (2004)	700 units	482 cumulative units	In Progress
Increase housing choices	HC #2: Number of housing units at or below 80% AMI that would not otherwise be available	0 units	700 units	482 cumulative units	In Progress
Increase housing choices	HC #5: Number of households able to move to a high-opportunity neighborhood	0% of new units	50% of new units	0% of new units	In Progress

ACTIVITY 2008-10 and 2008-11: EASY and WIN Rent Policies

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness and Self-sufficiency
APPROVAL: 2008
IMPLEMENTED: 2008

CHALLENGE: The administration of rental subsidies under existing HUD rules is overly complex and confusing to the households we serve. Significant staff time was being spent complying with federal requirements that do not promote better outcomes for residents, safeguard program integrity, or save taxpayer money. The rules regarding deductions, annual reviews and recertifications, and income calculations were cumbersome and often hard to understand. Many of our households live on fixed incomes that change only when there is a Cost of Living Adjustment (COLA), making annual reviews superfluous. For working households, HUD's rent rules include complicated earned-income disregards that can manifest as disincentives to income progression and employment advancement.

SOLUTION: KCHA has two rent reform policies. The first, EASY Rent, simplifies rent calculations and recertifications for households with seniors and persons with disabilities that derive 90% of their income from a fixed source (such as Social Security, Supplemental Security Income [SSI], or pension benefits), and are enrolled in our Public Housing, HCV, or project-based Section 8 programs. Rents are calculated at 28% of adjusted income with deductions for medical- and disability-related expenses in $2,500 bands, with the cap on deductions at $10,000. EASY Rent streamlines KCHA operations and simplifies the burden placed on residents by reducing recertification reviews to a three-year cycle, and rent adjustments based on COLA increases in Social Security and SSI payments to an annual cycle.

The second policy, WIN Rent, was implemented in FY 2010 to encourage increased economic self-sufficiency among households where individuals are able to work. WIN Rent is calculated on a series of income bands and the tenant's share of the rent is calculated at 28.3% of the lower end of each income band. This tiered system — in contrast to existing rent protocols — does not punish increases in earnings, as the tenant's rent does not change until household income increases to the next band level. Additionally, recertifications are conducted biennially instead of annually, allowing households to retain all increases in earnings during that time period without an accompanying increase to the tenant's share of rent. The WIN Rent structure also eliminates flat rents, income disregards, and deductions (other than childcare for eligible households), and excludes the employment income of household members under age 21. Households with little or no income are given a six-month reprieve during which time they are able to pay a lower rent or, in some cases, receive a credit payment. Following this period, a WIN Rent household pays a minimum rent of $25 regardless of income calculation.

In addition to changes to the recertification cycle, we also have streamlined processing and reviews. For example, we limit the number of tenant-requested reviews to reduce rent to two occurrences in a two-year period in the WIN Rent program. We estimate that these policy and operational modifications have reduced the relevant administrative workloads in the HCV and Public Housing programs by 20%.

PROGRESS AND OUTCOMES: KCHA continues to realize significant savings in staff time and resources through the simplified rent calculation protocol, saving more than 6,000 hours in 2019.

MTW Statutory Objective	Unit of Measurement	Baseline[21]	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	$116,787 saved[22]	$200,442 saved	Exceeded
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 hours saved	3,000 HCV staff hours saved; 450 PH staff hours saved	4,832 HCV staff hours saved; 1,242 PH staff hours saved	Exceeded
Increase self-sufficiency	SS #1: Average income of households (EASY)	HCV: $10,617 PH: $10,514	2% increase	HCV: $12,363 PH: $11,762	Exceeded
Increase self-sufficiency	SS #1: Average earned income of households (WIN)	HCV: $7,983 PH: $14,120	3% increase	HCV: $22,703 PH: $24,422	Exceeded

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[21] 2010 earned income baseline from Rent Reform Impact Report, John Seasholtz.
[22] This figure was calculated by multiplying the median hourly wage and benefits ($33) of the staff members who oversee this activity by the number of hours saved. This number is a monetization of the hours saved through the implementation of this program.

	SS #8: Households				
Increase self-sufficiency	transition to self-sufficiency[23]	0 households	25 households	195 households	Exceeded

ACTIVITY 2008-21: Public Housing and Housing Choice Voucher Utility Allowances

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness
APPROVAL: 2008
IMPLEMENTED: 2010

CHALLENGE: KCHA would spend an estimated $23,600 in additional staff time to administer utility allowances under HUD's one-size-fits-all national guidelines. HUD's national approach fails to capture average consumption levels in the Puget Sound area.

SOLUTION: This activity simplifies the HUD rules on Public Housing and HCV Utility Allowances by applying a universal methodology that reflects local consumption patterns and costs. Before this policy change, allowances were calculated for each individual unit and household type with varied rules under the HCV and Public Housing programs. Additionally, HUD required an immediate update of the allowances with each cumulative 10% rate increase made by utility companies. Now, KCHA provides allowance adjustments annually when the Consumer Price Index produces a change (decrease or increase) of more than 10% rather than each time an adjustment is made to the utility equation. We examined data from a Seattle City Light study completed in 2009, which allowed us to identify key factors in household energy use and project average consumption levels for various types of units in the Puget Sound region. We used this information to set a new utility schedule that considers various factors: type of unit (single vs. multi-family); size of unit; high-rise vs. low-rise units; and the utility provider. We also modified allowances for units where the resident pays water and/or sewer charges. KCHA's Hardship Policy, adopted in July 2010, allows KCHA to respond to unique household or property circumstances and documented cases of financial hardship, including utility rate issues.

PROGRESS AND OUTCOMES: KCHA continued to set utility allowances to the streamlined regional utility schedule, allowing us to save more than 300 hours of staff time this past year.

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[23] Self-sufficiency is defined as a positive move from subsidized housing.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	$22,116 saved[24]	$23,636 saved	Exceeded
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 hours saved	291 hours saved	311 hours saved	Exceeded
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 minutes saved per HCV file and 0 minutes saved per PH file	2.5 minutes saved per HCV file and 5 minutes saved per PH file	2.5 minutes saved per HCV file and 5 minutes saved per PH file	Achieved

ACTIVITY 2007-6: Develop a Sponsor-based Housing Program

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2007
IMPLEMENTED: 2007

CHALLENGE: According to the January 2019 point-in-time count, 11,199 individuals in King County were experiencing homelessness.[25] Of those, 2,213 people were experiencing chronic homelessness. Many people who experience chronic homelessness require additional support, beyond rental subsidy, to secure and maintain a safe and stable place to live.

SOLUTION: In the sponsor-based housing program, KCHA provides housing funds directly to our behavioral health care partners, including Sound, Navos Mental Health Solutions, and Valley Cities Counseling and Consultation. These providers use the funds to secure private market rentals that are then subleased to program participants. The programs operate under the "Housing First" model of supportive housing, which couples low-barrier placement in permanent, scattered-site housing with intensive, individualized services that help residents maintain long-term housing stability. Recipients of this type of support are referred through the mental health system, street outreach teams, and King County's Coordinated Entry for All system. Once a resident is stabilized and ready for a more independent living environment, KCHA offers a move-on strategy through a tenant-based non-elderly disability voucher.

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[24] This figure was calculated by multiplying the median hourly wage and benefits ($76) of the staff member who oversees this activity by the number of hours saved. The number is a monetization of the hours saved through the implementation of this program.

[25] Count Us In 2019: Seattle/King County Point-in-Time Count of Persons Experiencing Homelessness. http://allhomekc.org/wp-content/uploads/2019/09/KING-9.5-v2.pdf.

PROGRESS AND OUTCOMES: In 2019, we continued to serve populations facing the greatest barriers to housing stability through a Housing First model that coordinates across the housing, behavioral health, and homeless systems. Our partners faced increasing challenges recruiting and retaining landlords, creating a challenging environment for the provision of this program. Valley Cities is actively recruiting for a landlord to enter into a project-based voucher contract to ensure supportive housing options are available to young adults experiencing homelessness in King County.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Increase housing choices	HC #1: Number of new units made available for households at or below 80% AMI	0 units	95 units	96 units	Exceeded
Increase housing choices	HC #5: Number of households able to move to a better unit	0 households	95 households	96 households	Exceeded
Increase self-sufficiency	SS #5: Number of households receiving services aimed to increase self-sufficiency	0 households	95 households	96 households	Exceeded
Increase self-sufficiency	SS #8: Number of households transitioned to self-sufficiency[26]	0 households	90 households	82 households	Partially Achieved

ACTIVITY 2007-14: Enhanced Transfer Policy

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness
APPROVAL: 2007
IMPLEMENTED: 2007

CHALLENGE: HUD rules restrict a resident from moving from Public Housing to HCV, or from HCV to Public Housing, which hampers our ability to meet the needs of our residents. For example, Project-based Section 8 (PBS8) residents may need to move if their physical abilities change and they can no longer access their second-story, walk-up apartment. A Public Housing property may have an accessible unit available. Under traditional HUD regulations, this resident would not be able to move into this available unit.

SOLUTION: Under existing HUD guidelines, a resident cannot transfer between the HCV and Public Housing programs regardless of whether a more appropriate unit for the resident is available in the

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[26] Self-sufficiency for this activity is defined as securing and maintaining housing.

other program. This policy allows a resident to transfer among KCHA's various subsidized programs and expedites access to Uniform Federal Accessibility Standards (UFAS)-rated units for mobility-impaired households. In addition to mobility needs, a household might grow in size and require a larger unit with more bedrooms. The enhanced transfer policy allows a household to move to a larger unit when one becomes available in either program. In 2009, KCHA took this one step further by actively encouraging over-housed or under-housed residents to transfer when an appropriately sized unit becomes available. The flexibility provided through this policy allows us to swiftly meet the needs of our residents by housing them in a unit that suits their situation best, regardless of which federal subsidy they receive.

PROGRESS AND OUTCOMES: In 2019, 16 households that traditionally would not have been eligible for a change of unit were able to move to a more suitable unit.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Increase housing choices	HC # 5: Number of households able to move to a better unit and/or a high-opportunity neighborhood	0 households	10 households	16 households	Exceeded

ACTIVITY 2005-4: Payment Standard Changes

MTW STATUTORY OBJECTIVE: Increase Housing Choice
APPROVAL: 2005
IMPLEMENTED: 2005

CHALLENGE: Currently, 32% of KCHA's tenant-based voucher households live in high-opportunity neighborhoods of King County, which means about 70% may be unable to reap the benefits that come with residing in such an area. These benefits include improved educational opportunities, increased access to public transportation, and greater economic opportunities.[27] Not surprisingly, high-opportunity neighborhoods also have more expensive rents. According to recent market data, a two-bedroom rental unit at the 40th percentile in east King County — typically a high-opportunity area — costs $685 more than the same unit in lower opportunity areas of south King County.[28] To move to high-opportunity areas, voucher holders need sufficient resources, which are not available under traditional

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[27] Neighborhood opportunity designations are from the Puget Sound Regional Council and Kirwan Institute's Opportunity Mapping index (https://www.psrc.org/opportunity-mapping).
[28] CoStar Multi-Family Rental Data, 2019.

payment standards. Conversely, broadly applied payment standards that encompass multiple housing markets — low and high — result in HCV rents "leading the market" in lower-priced areas.

SOLUTION: This initiative develops local criteria for the determination and assignment of payment standards to better match local rental markets, with the goals of increasing affordability in high-opportunity neighborhoods and ensuring the best use of limited financial resources. We develop our payment standards through an analysis of local submarket conditions, trends, and projections. This approach means that we can provide subsidy levels sufficient for families to afford the rents in high-opportunity areas of the county and not have to pay market-leading rents in less expensive neighborhoods. As a result, our residents are less likely to be squeezed out by tighter rental markets and therefore have greater geographic choice. In 2005, KCHA began applying new payment standards at the time of a resident's next annual review. In 2007, we expanded this initiative and allowed approval of payment standards of up to 120% of Fair Market Rent (FMR) without HUD approval. In early 2008, we decoupled the payment standards from HUD's FMR calculations entirely so that we could be responsive to the range of rents in Puget Sound's submarkets. Current payment standards for two-bedroom apartments range from 76% to 113% of the regional HUD FMR.

In 2016, KCHA implemented a five-tiered payment standard system based on ZIP Codes. We arrived at a five-tiered approach by analyzing recent tenant lease-up records, consulting local real estate data, holding forums with residents and staff, reviewing small area FMR payment standard systems implemented by other housing authorities, and assessing the financial implications of various approaches. In designing the new system, we sought to have enough tiers to account for submarket variations but not so many that the new system became burdensome and confusing for staff and residents. At the end of 2017, we implemented an additional sixth payment standard tier to more closely account for variations in a local housing market. In 2018, we implemented a biannual review of market conditions to ensure our payment standards were keeping pace with the rapidly changing submarkets in King County.

PROGRESS AND OUTCOMES: At the end of 2019, 32% of all tenant-based voucher households were living in high-opportunity neighborhoods.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0	$0	$0	Achieved

Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete the task in staff hours	0 hours	0 hours	0 hours[29]	Achieved
Increase housing choices	HC #5: Number of households able to move to a high-opportunity neighborhood[30]	21% of HCV households live in high-opportunity neighborhoods	30% of HCV households live in high-opportunity neighborhoods	32% of HCV households live in high-opportunity neighborhoods	Exceeded

ACTIVITY 2004-2: Local Project-based Section 8 Program

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness and Housing Choice
APPROVAL: 2004
IMPLEMENTED: 2004

CHALLENGE: Current project-basing regulations are cumbersome and present multiple obstacles to serving high-need households, partnering effectively and efficiently with nonprofit developers, and promoting housing options in high-opportunity areas. Some private-market landlords refuse to rent to tenants with imperfect credit or rental history, especially in tight rental markets such as ours.

Meanwhile, nonprofit housing acquisition and development projects that would serve extremely low-income households require reliable sources of rental subsidies. The reliability of these sources is critical for the financial underwriting of these projects and successful engagement with banks and tax-credit equity investors.

SOLUTION: The ability to streamline the Project-based Section 8 (PBS8) program is an important factor in addressing the distribution of affordable housing in King County and coordinating effectively with local initiatives. KCHA places PBS8 subsidies in high-opportunity areas of the county in order to increase access to these desirable neighborhoods for low-income households.[31] We also partner with nonprofit community service providers to create housing targeted to special needs populations, opening new housing opportunities for people experiencing chronic homelessness, behavioral health issues, or a disability, as well as young adults and families exiting homelessness traditionally not served through our mainstream Public Housing and HCV programs. Additionally, we coordinate with county government and suburban jurisdictions to underwrite a pipeline of new affordable housing developed by local

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[29] This activity is net neutral in terms of hours or dollars saved. Workload remained the same, however staff changed the timing of when they were applying payment standards.
[30] All tenant-based voucher households.
[31] Neighborhood opportunity designations are from the Puget Sound Regional Council and Kirwan Institute's Opportunity Mapping index (https://www.psrc.org/opportunity-mapping).

nonprofit housing providers. MTW flexibility granted by this activity has helped us implement the following policies.

CREATE HOUSING TARGETED TO SPECIAL-NEEDS POPULATIONS BY:

- Assigning PBS8 subsidy to a limited number of demonstration projects not qualifying under standard policy in order to serve important public purposes. (FY 2004)
- Modifying eligibility and selection policies as needed to align with entry criteria for nonprofit-operated housing programs. (FY 2004)

SUPPORT A PIPELINE OF NEW AFFORDABLE HOUSING BY:

- Prioritizing assignment of PBS8 assistance to units located in high-opportunity census tracts, including those with poverty rates lower than 20%. (FY 2004)
- Waiving the 25% cap on the number of units that can be project-based on a single site. (FY 2004)
- Allocating PBS8 subsidy non-competitively to KCHA-controlled sites or other jurisdictions, and using an existing local government procurement process for project-basing Section 8 assistance. (FY 2004)
- Allowing owners and agents to conduct their own construction and/or rehab inspections, and having the management entity complete the initial inspection rather than KCHA, with inspection sampling at annual review. (FY 2004)
- Modifying eligible unit and housing types to include shared housing, cooperative housing, transitional housing, and high-rise buildings. (FY 2004)
- Allowing PBS8 rules to defer to Public Housing rules when used in conjunction with a mixed finance approach to housing preservation or when assigned to a redeveloped former Public Housing property. (FY 2008)
- Partnering with local municipalities to develop a local competitive process that pairs project-based assistance with local zoning incentives. (FY 2016)

IMPROVE PROGRAM ADMINISTRATION BY:

- Allowing project sponsors to manage project wait lists as determined by KCHA. (FY 2004)
- Using KCHA's standard HCV process for determining Rent Reasonableness for units in lieu of requiring third-party appraisals. (FY 2004)

- Allowing participants in "wrong-sized" units to remain in place and pay the higher rent, if needed. (FY 2004)

- Assigning standard HCV payment standards to PBS8 units, allowing modification with approval of KCHA where deemed appropriate. (FY 2004)

- Offering moves to Public Housing in lieu of an HCV exit voucher (FY 2004) or allowing offer of a tenant-based voucher for a limited period as determined by KCHA in conjunction with internal Public Housing disposition activity. (FY 2012)

- Allowing KCHA to modify the HAP contract. (FY 2004)

- Eliminating the procedure of temporarily removing units from the HAP contract in cases in which a PBS8 resident is paying full HAP (2004).

- Using Public Housing preferences for PBS8 units in place of HCV preferences. (FY 2008)

- Allowing KCHA to inspect units at contract execution rather than contract proposal. (FY 2009)

- Modifying the definition of "existing housing" to include housing that could meet Housing Quality Standards (HQS) within 180 days. (FY 2009)

- Allowing direct owner or provider referrals to a PBS8 vacancy when the unit has remained vacant for more than 30 days. (FY 2010)

- Waiving the 20% cap on the amount of HCV budget authority that can be project-based, allowing KCHA to determine the size of our PBS8 program. (FY 2010)

PROGRESS AND OUTCOMES: KCHA continued to see efficiencies through streamlined program administration and modified business processes, saving and redirecting an estimated 45 hours per contract for each issued Request for Proposal (RFP).

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved per contract	$1,980 saved per contract[32]	$1,980 saved per contract	Achieved
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 hours saved per contract for RFP	45 hours saved per contract for RFP	45 hours saved per contract for RFP	Achieved
Increase housing choices	HC #3: Average applicant time on wait list in months (decrease)	0 months	29 months	43 months[33]	In Progress

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[32] This figure was calculated by multiplying the median hourly wage and benefits ($44) of the staff member who oversees this activity by the number of hours saved. The number is a monetization of the hours saved through the implementation of this program.

[33] KCHA calculated this figure differently than in past years. We took the weighted average of the wait time for applicant households currently on these lists. In the past, we calculated the wait time for those who entered housing in the fiscal year.

			45% of project-	48% of project-	
Increase housing choices	HC #5: Number of households able to move to a better unit and/or high-opportunity neighborhood	0 households	based units in high-opportunity neighborhoods	based units in high-opportunity neighborhoods	Exceeded

ACTIVITY 2004-3: Develop Site-based Waiting Lists

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness and Housing Choice
APPROVAL: 2004
IMPLEMENTED: 2004

CHALLENGE: Under traditional HUD wait list guidelines, public housing residents have limited choice about where they live. They have to accept the first unit that comes available, which might not meet the family's needs or preferences, such as proximity to a child's school or access to local service providers.

SOLUTION: Under this initiative, we have implemented a streamlined wait list system for our Public Housing program that provides applicants additional options for choosing the location where they want to live. In addition to offering site-based wait lists, we also maintain regional wait lists and have established a list to accommodate the needs of graduates from the region's network of transitional housing facilities for families experiencing homelessness. In general, applicants are selected for occupancy using a rotation between the site-based, regional, and transitional housing applicant pools, based on an equal ratio. Units are not held vacant if a particular wait list is lacking an eligible applicant. Instead, a qualified applicant is pulled from the next wait list in the rotation.

PROGRESS AND OUTCOMES: This streamlined process continued to save an estimated 171 hours of staff time annually.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	$4,176 saved[34]	$4,959 saved	Exceeded
Reduce costs and achieve greater cost-effectiveness	CE#2: Total time to complete task in staff hours	0 hours saved	144 hours saved	171 hours saved	Exceeded

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[34] This figure was calculated by multiplying the median hourly wage and benefits ($29) of the staff member who oversees this activity by the number of hours saved. The number is a monetization of the hours saved through the implementation of this program.

Increase housing choices	HC #3: Average applicant time on wait list in months (decrease)	75 months	75 months	75 months[35]	Achieved
Increase housing choices	HC #5: Number of households able to move to a better unit and/or high-opportunity neighborhood	0% of applicants	100% of Public Housing and project-based applicants housed from site-based or regional wait lists	100% of Public Housing and project-based applicants housed from site-based or regional wait lists	Achieved

ACTIVITY 2004-5: Modified Housing Quality Standards (HQS) Inspection Protocols

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness
APPROVAL: 2004
IMPLEMENTED: 2004

CHALLENGE: HUD's HQS inspection protocols often require multiple trips to the same neighborhood, the use of third-party inspectors, and blanket treatment of diverse housing types, adding more than $100,000 to annual administrative costs. Follow-up inspections for minor "fail" items impose additional burdens on landlords, who in turn may resist renting to families with HCVs.

SOLUTION: Through a series of HCV program modifications, we have streamlined the HQS inspection process to simplify program administration, improve stakeholder satisfaction, and reduce administrative costs. Specific policy changes include: allowing the release of HAP payments when a unit fails an HQS inspection due to minor deficiencies (applies to both annual and initial move-in inspections); geographically clustering inspections to reduce repeat trips to the same neighborhood or building by accepting annual inspections completed eight to 20 months after initial inspection, allowing us to align inspection of multiple units in the same geographic location; and self-inspecting KCHA-owned units rather than requiring inspection by a third party. KCHA also piloted a risk-based inspection model that places well-maintained, multi-family apartment complexes on a biennial inspection schedule.

After closely monitoring the outcomes from the risk-based inspection pilot, KCHA decided to expand the program and move all units in multi-family apartment complexes to a biennial inspection schedule.

PROGRESS AND OUTCOMES: At the end of 2019, KCHA implemented an initial inspection pilot that allows landlords of new construction properties to self-certify that their units meets basic HQS requirements.

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[35] 2019 was a new baselining year as we adjusted how we calculate this metric.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0	$58,000 saved[36]	$114,279 saved	Exceeded
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 hours saved	1,810 hours saved	3,463 hours saved	Exceeded

ACTIVITY 2004-7: Streamlining Public Housing and Housing Choice Voucher Forms and Data Processing

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness
APPROVAL: 2004
IMPLEMENTED: 2004

CHALLENGE: Duplicative recertifications, complex income calculations, and strict timing rules cause unnecessary intrusions into the lives of the people we serve and expend limited resources for little purpose.

SOLUTION: After analyzing our business processes, forms, and verification requirements, we have eliminated or replaced those with little or no value. Through the use of lean engineering techniques, KCHA continues to review office workflow and identify ways that tasks can be accomplished more efficiently and intrude less into the lives of program participants, while still assuring program integrity and quality control. Under this initiative, we have made a number of changes to our business practices and processes for verifying and calculating tenant income and rent.

CHANGES TO BUSINESS PROCESSES:
- Modify HCV policy to require notice to move prior to the 20th of the month in order to have paperwork processed during the month. (FY 2004)
- Allow applicant households to self-certify membership in the family at the time of admission. (FY 2004)
- Modify HQS inspection requirements for units converted to project-based subsidy from another KCHA subsidy, and allow the most recent inspection completed within the prior 12 months to substitute for the initial HQS inspection required before entering the HAP contract. (FY 2012)

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[36] This figure was calculated by multiplying the median inspector hourly wage and benefits ($33) by the number of hours saved. These positions are not eliminated so this is a hypothetical estimate of the amount that could be saved in staff hours by implementing this activity. Inspectors will instead undertake more auditing and monitoring inspections, assist the fraud investigator, provide landlord trainings, and speed up the timeline for new move-in inspections. It is a monetization of the hours saved through the implementation of this program.

- Modify standard PBS8 requirements to allow the most recent recertification (within last 12 months) to substitute for the full recertification when a tenant's unit is converted to a PBS8 subsidy. (FY 2012)
- Allow Public Housing applicant households to qualify for a preference when household income is below 30% of AMI. (FY 2004)
- Streamline procedures for processing interim rent changes resulting from wholesale reductions in state entitlement programs. (FY 2011)
- Modify the HQS inspection process to allow streamlined processing of inspection data. (FY 2010)
- Establish a local release form that replaces the HUD form 9986 and is renewed every 40 months. (FY 2014)

CHANGES TO VERIFICATION AND INCOME CALCULATION PROCESSES:

- Exclude payments made to a landlord by the Washington State Department of Social and Health Services (DSHS) on behalf of a tenant from the income and rent calculation under the HCV program. (FY 2004)
- Allow HCV residents to self-certify income of $50 or less received as a pass-through DSHS childcare subsidy. (FY 2004)
- Extend to 180 days the term over which verifications are considered valid. (FY 2008)
- Modify the definition of "income" to exclude income from assets with a value less than $50,000, and income from Resident Service Stipends less than $500 per month. (FY 2008)
- Apply any decrease in Payment Standard at the time of the next annual review or update, rather than using HUD's two-year phase-in approach. (FY 2004)
- Allow HCV residents who are at $0 HAP to self-certify income at the time of review. (FY 2004)

PROGRESS AND OUTCOMES: These streamlined processes saved the agency more than 2,100 hours in staff time this year.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0	$58,000 saved[37]	$61,132 saved	Exceeded
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete the task in staff hours	0 hours saved	2,000 hours saved	2,108 hours saved	Exceeded

[37] This figure was calculated by multiplying the median Property Management Specialist hourly wage and benefits ($29) by the number of hours saved. It is a monetization of the hours saved through the implementation of this program.

ACTIVITY 2004-9: Rent Reasonableness Modifications

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness
APPROVAL: 2004
IMPLEMENTED: 2004

CHALLENGE: Under current HUD regulations, a housing authority must perform an annual Rent Reasonableness review for each voucher holder. If a property owner is not requesting a rent increase, however, the rent does not fall out of federal guidelines and does not necessitate a review.

SOLUTION: KCHA now saves more than 1,000 hours of staff time annually by performing Rent Reasonableness determinations only when a landlord requests an increase in rent. Under standard HUD regulations, a Rent Reasonableness review is required annually in conjunction with each recertification completed under the program. After reviewing this policy, we found that if an owner had not requested a rent increase, it was unlikely the current rent fell outside of established guidelines. In response to this analysis, KCHA eliminated an annual review of rent levels. By bypassing this burdensome process, we intrude in the lives of residents less and can redirect our resources to more pressing needs. Additionally, KCHA performs Rent Reasonableness inspections at our own properties, rather than contracting with a third party, allowing us to save additional resources.

PROGRESS AND OUTCOMES: With the elimination of this non-essential regulation, KCHA has been able to adopt a policy that is less disruptive to residents while saving an estimated 1,000 hours in staff time each year.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	$33,000 saved[38]	$34,782 saved	Exceeded
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 staff hours saved	1,000 staff hours saved	1,054 staff hours saved	Exceeded

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[38] This figure was calculated by multiplying the median Inspector hourly wage and benefits ($33) by the number of hours saved. These positions are not eliminated so this is a hypothetical estimate of the amount that could be saved in staff hours by implementing this activity. Inspectors will instead undertake more auditing and monitoring inspections, assist the fraud investigator, provide landlord trainings, and perform new move-in inspections. It is a monetization of the hours saved through the implementation of this program.

ACTIVITY 2004-12: Energy Performance Contracting

MTW STATUTORY OBJECTIVE: Increase Cost Effectiveness
APPROVAL: 2004
IMPLEMENTED: 2004

CHALLENGE: KCHA could recapture more than $3 million in energy savings per year if provided the upfront investment necessary to make efficiency upgrades to our aging housing stock.

SOLUTION: KCHA employs energy conservation measures and improvements through the use of Energy Performance Contracting (EPC) — a financing tool that allows Public Housing Authorities to make needed energy upgrades without having to self-fund the upfront necessary capital expenses. The energy services partner (in this case, Johnson Controls) identifies these improvements through an investment-grade energy audit that is then used to underwrite loans to pay for the measures. Project expenses, including debt service, are then paid for out of the energy savings while KCHA and our residents receive the long-term savings and benefits. Upgrades may include: installation of energy-efficient light fixtures, solar panels, and low-flow faucets, toilets, and showerheads; upgraded appliances and plumbing; and improved irrigation and HVAC systems. In 2016, we extended the existing EPC for an additional eight years and implemented a new 20-year EPC for incremental Public Housing properties to make needed improvements.

PROGRESS AND OUTCOMES: In 2019, we finished upgrading aging elevators in our federally subsidized properties for seniors and people with disabilities, investing more than $4.3 million in the replacement of the hydraulic jacks, cabs, and electrical equipment at Boulevard Manor and Munro Manor. Overall, we saw energy savings of more than $3.4 million as a result of our EPC upgrade work.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0 saved	$800,000 saved	$3,400,000 saved	Exceeded

ACTIVITY 2004-16: Housing Choice Voucher Occupancy Requirements

MTW STATUTORY OBJECTIVE: Increase Cost-effectiveness
APPROVAL: 2004
IMPLEMENTED: 2004

CHALLENGE: More than 20% of tenant-based voucher households move two or more times while receiving subsidy. Moves can be beneficial if they lead to gains in neighborhood or housing quality for the household, but moves can also be burdensome to residents because they incur the costs of finding a new unit through application fees and other moving expenses. KCHA also incurs additional costs in staff time through processing moves and working with families to locate a new unit.

SOLUTION: Households may continue to live in their current unit when their family size exceeds the standard occupancy requirements by just one member. Under standard guidelines, a seven-person household living in a three-bedroom unit would be considered overcrowded and therefore be required to move to a larger unit. Under this modified policy, the family may remain voluntarily in its current unit, avoiding the costs and disruption of moving. This initiative reduces the number of processed annual moves, increases housing choice among these families, and reduces our administrative and HAP expenses.

PROGRESS AND OUTCOMES: By eliminating this rule, KCHA saves an estimated 867 hours in staff time each year while helping families avoid the disruption and costs of a move.

MTW Statutory Objective	Unit of Measurement	Baseline	Benchmark	Outcome	Benchmark Achieved?
Reduce costs and achieve greater cost-effectiveness	CE #1: Total cost of task in dollars	$0	$8,613 saved[39]	$28,611 saved	Exceeded
Reduce costs and achieve greater cost-effectiveness	CE #2: Total time to complete task in staff hours	0 hours saved per file	87 hours saved	867 hours saved[40]	Exceeded
Increase housing choices	HC #4: Number of households at or below 80% AMI that would lose assistance or need to move	0 households	150 households	289 households	Exceeded

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[39] This dollar figure was calculated by multiplying the median Property Management Specialist hourly wage and benefits ($33) by the number of hours saved.
[40] According to current program data, 289 households currently exceed the occupancy standard. At three hours saved per file, we estimate that KCHA continues to save 867 hours annually.

B. NOT YET IMPLEMENTED ACTIVITIES

Activities listed in this section are approved but have not yet been implemented.

ACTIVITY 2015-1: Flat Subsidy for Local, Non-traditional Housing Programs

APPROVAL: 2015

This activity provides a flat, per-unit subsidy in lieu of a monthly HAP and allows the service provider to dictate the terms of the tenancy (such as length of stay and the tenant portion of rent). The funding would be block-granted based on the number of units authorized under contract and occupied in each program. This flexibility would allow KCHA to better support a "Housing First" approach that places high-risk populations experiencing homelessness in supportive housing programs tailored to nimbly meet an individual's needs. This activity will be reconsidered for implementation when KCHA has more capacity to develop the program.

ACTIVITY 2010-1: Supportive Housing for High-need Homeless Families

APPROVAL: 2010

This activity is a demonstration program for up to 20 households in a project-based Family Unification Program (FUP)-like environment. The demonstration program currently is deferred, as our program partners opted for a tenant-based model. It might return in a future program year.

ACTIVITY 2010-9: Limit Number of Moves for an HCV Participant

APPROVAL: 2010

This policy aims to increase family and student classroom stability and reduce program administrative costs by limiting the number of times an HCV participant can move per year or over a set time. This activity is currently deferred for consideration to a future year, if the need arises.

ACTIVITY 2010-11: Incentive Payments to HCV Participants to Leave the Program

APPROVAL: 2010

KCHA may offer incentive payments to families receiving less than $100 per month in HAP to voluntarily withdraw from the program. This activity is not currently needed in our program model but may be considered in a future fiscal year.

ACTIVITY 2008-3: FSS Program Modifications

MTW STATUTORY OBJECTIVE: Increase Self-sufficiency
APPROVAL: 2008

KCHA is exploring possible modifications to the Family Self-Sufficiency (FSS) program that could increase incentives for resident participation and income growth. These outcomes could pave the way for residents to realize a higher degree of economic independence. The program currently includes elements that unintentionally act as disincentives for higher income earners, the very residents who could benefit most from additional support to exit subsidized housing programs. To address these issues, KCHA is exploring modifying the escrow calculation in order to avoid punishing higher earning households unintentionally.

This activity is part of a larger strategic planning process with local service providers that seeks to increase positive economic outcomes for residents.

ACTIVITY 2008-5: Allow Limited Double Subsidy between Programs (Project-based Section 8/Public Housing/Housing Choice Vouchers)

APPROVAL: 2008

This policy change facilitates program transfers in limited circumstances, increases landlord participation, and reduces the impact on the Public Housing program when tenants transfer. Following the initial review, this activity was tabled for future consideration.

C. ACTIVITIES ON HOLD

There are no activities on hold.

D. CLOSED-OUT ACTIVITIES

Activities listed in this section are closed out, meaning they never have been implemented, that we do not plan to implement them in the future, or that they are completed or obsolete.

ACTIVITY 2016-1: Budget-based Rent Model

APPROVAL: 2016
CLOSEOUT YEAR: 2018

This activity allows KCHA to adopt a budget-based approach to calculating the contract rent at our Project-based Section 8 developments. Traditionally, HUD requires Public Housing Authorities to set rent in accordance with Rent Reasonableness statutes. These statutes require that a property's costs reflect the average costs of a comparable building in the same geographic region at a particular point in time. However, a property's needs and purpose can change over time. This set of rules does not take into consideration variations in costs, which might include added operational expenses, necessary upgrades, and increased debt service to pay for renovations. This budget-based rent model allows KCHA to create an appropriate annual budget for each property from which a reasonable, cost-conscious rent level would derive.

This policy is no longer under consideration.

ACTIVITY 2013-3: Short-term Rental Assistance Program

APPROVAL: 2013
CLOSEOUT YEAR: 2015

In partnership with the Highline School District, KCHA implemented the Student and Family Stability Initiative (SFSI), a Rapid Re-housing demonstration program. Using this evidence-based approach, our program paired short-term rental assistance with housing stability and employment connection services for families experiencing or on the verge of homelessness. This activity is ongoing but has been combined with Activity 2013-2: Flexible Rental Assistance, as the program models are similar and enlist the same MTW flexibilities.

ACTIVITY 2012-2: Community Choice Program

APPROVAL: 2012
CLOSEOUT YEAR: 2016

This initiative was designed to encourage and enable HCV households with young children to relocate to areas of the county with higher achieving school districts and other community benefits. In addition to

formidable barriers to accessing these neighborhoods, many households are not aware of the link between location and educational and employment opportunities. Through collaboration with local nonprofits and landlords, the Community Choice Program offered one-on-one counseling to households in deciding where to live, helped households secure housing in their community of choice, and provided ongoing support once a family moved to a new neighborhood. Lessons learned from this pilot are informing Creating Moves to Opportunity (CMTO), KCHA's new research partnership that seeks to expand geographic choice.

ACTIVITY 2012-4: Supplemental Support for the Highline Community Healthy Homes Project

APPROVAL: 2012
CLOSEOUT YEAR: 2012

This project provided supplemental financial support to low-income families not otherwise qualified for the Healthy Homes project but requiring assistance to avoid loss of affordable housing. This activity is completed. An evaluation of the program by Breysse *et al* was included in KCHA's 2013 Annual MTW Report.

ACTIVITY 2011-1: Transfer of Public Housing Units to Project-based Subsidy

APPROVAL: 2011
CLOSEOUT YEAR: 2012

By transferring Public Housing units to Project-based subsidy, KCHA preserved the long-term viability of 509 units of Public Housing. By disposing these units to a KCHA-controlled entity, we were able to leverage funds to accelerate capital repairs and increase tenant mobility through the provision of tenant-based voucher options to existing Public Housing residents. This activity is completed.

ACTIVITY 2011-2: Redesign the Sound Families Program

APPROVAL: 2011
CLOSEOUT YEAR: 2014

KCHA developed an alternative model to the Sound Families program that combines HCV funds with Washington State Department of Social and Health Services funds. The goal was to continue the support of at-risk households experiencing homelessness in a FUP-like model after the completion of the Sound Families demonstration. This activity is completed and the services have been incorporated into our existing conditional housing program.

ACTIVITY 2010-2: Resident Satisfaction Survey

APPROVAL: 2010
CLOSEOUT YEAR: 2010

KCHA developed our own resident survey in lieu of the requirement to comply with the Resident Assessment Subsystem portion of HUD's Public Housing Assessment System (PHAS). The Resident Assessment Subsystem is no longer included in PHAS so this activity is obsolete. KCHA nevertheless continues to survey residents on a regular basis.

ACTIVITY 2010-10: Implement a Maximum Asset Threshold for Program Eligibility

APPROVAL: 2010
CLOSEOUT YEAR: 2016

This activity limits the value of assets that can be held by a family in order to obtain (or retain) program eligibility. This policy is no longer under consideration.

ACTIVITY 2009-2: Definition of Live-in Attendant

APPROVAL: 2009
CLOSEOUT YEAR: 2014

In 2009, KCHA considered a policy change that would redefine who is considered a "Live-in Attendant." This policy is no longer under consideration.

ACTIVITY 2008-4: Combined Program Management

APPROVAL: 2008
CLOSEOUT YEAR: 2009

This activity streamlined program administration through a series of policy changes that ease operations of units converted from Public Housing to Project-based Section 8 subsidy or those located in sites supported by mixed funding streams. This policy change is completed.

ACTIVITY 2008-6: Performance Standards

APPROVAL: 2008
CLOSEOUT YEAR: 2014

In 2008, KCHA investigated the idea of developing performance standards and benchmarks to evaluate the MTW program. We worked with other MTW agencies in the development of the performance standards now being field-tested across the country. This activity is closed out as KCHA continues to collaborate with other MTW agencies on industry metrics and standards.

ACTIVITY 2008-17: Income Eligibility and Maximum Income Limits

APPROVAL: 2008
CLOSEOUT YEAR: 2016

This policy would cap the income that residents may have and also still be eligible for KCHA programs. KCHA is no longer considering this activity.

ACTIVITY 2007-4: Housing Choice Voucher Applicant Eligibility

APPROVAL: 2007
CLOSEOUT YEAR: 2007

This activity increased program efficiency by removing eligibility for those currently on a federal subsidy program. This activity is completed.

ACTIVITY 2007-8: Remove Cap on Voucher Utilization

APPROVAL: 2007
CLOSEOUT YEAR: 2014

This initiative allowed us to award HCV assistance to more households than was permissible under the HUD-established baseline. Our savings from a multi-tiered payment standard system, operational efficiencies, and other policy changes have been critical in helping us respond to the growing housing needs of the region's extremely low-income households. This activity is no longer active as agencies are now permitted to lease above their ACC limit.

ACTIVITY 2007-9: Develop a Local Asset Management Funding Model

APPROVAL: 2007
CLOSEOUT YEAR: 2007

This activity streamlined current HUD requirements to track budget expenses and income down to the Asset Management Project level. This activity is completed.

ACTIVITY 2007-18: Resident Opportunity Plan (ROP)

APPROVAL: 2007
CLOSEOUT YEAR: 2015

An expanded and locally designed version of FSS, ROP's mission was to advance families toward self-sufficiency through the provision of case management, supportive services, and program incentives, with the goal of positive transition from Public Housing or HCV into private market rental housing or home ownership. KCHA implemented this five-year pilot in collaboration with community partners, including Bellevue College and the YWCA. These partners provided education and employment-focused

case management, such as individualized career planning, a focus on wage progression, and asset-building assistance. In lieu of a standard FSS escrow account, each household received a monthly deposit into a savings account, which continued throughout program participation. Deposits to the household savings account were made available to residents upon graduation from Public Housing or HCV subsidy. After reviewing the mixed outcomes from the multi-year evaluation, KCHA decided to close out the program and re-evaluate the best way to assist families in achieving economic independence.

ACTIVITY 2006-1: Block Grant Non-mainstream Vouchers

APPROVAL: 2006
CLOSEOUT YEAR: 2006

This policy change expanded KCHA's MTW Block Grant by including all non-Mainstream program vouchers. This activity is completed.

ACTIVITY 2005-18: Modified Rent Cap for Housing Choice Voucher Participants

APPROVAL: 2005
CLOSEOUT YEAR: 2005

This modification allowed a tenant's portion of rent to be capped at up to 40% of gross income upon initial lease-up rather than 40% of adjusted income. *Note: KCHA may implement a rent cap modification in the future to increase mobility.*

ACTIVITY 2004-8: Resident Opportunities and Self-Sufficiency (ROSS) Grant Homeownership

APPROVAL: 2004
CLOSEOUT YEAR: 2006

This grant funded financial assistance through MTW reserves with rules modified to fit local circumstances, modified eligibility to include Public Housing residents with HCV, required minimum income and minimum savings prior to entry, and expanded eligibility to include more than first-time homebuyers. This activity is completed.

SECTION V

SOURCES AND USES OF MTW FUNDS

A. SOURCES AND USES OF MTW FUNDS

i. Actual Sources and Uses of MTW Funds

In accordance with the requirements of this report, KCHA has submitted our unaudited information in the prescribed FDS file format through the Financial Assessment System – PHA. The audited FDS will be submitted in September 2020.

ii. Activities that Used Only MTW Single-fund Flexibility

KCHA is committed to making the most efficient, effective, and creative use of our single-fund flexibility while adhering to the statutory requirements of the MTW program. Our ability to blend funding sources gives us the freedom to implement new approaches to program delivery in response to the varied housing needs of low-income people in the Puget Sound region. With MTW flexibility, we have assisted more of our county's households — and among those, more of the most marginalized and lowest income households — than would have been possible under HUD's traditional funding and program constraints.

KCHA's MTW single-fund activities, described below, demonstrate the value and effectiveness of single-fund flexibility in practice:

- **KCHA'S HOMELESS HOUSING INITIATIVES.** These initiatives addressed the varied and diverse needs of the most vulnerable populations experiencing homelessness — those living with chronic behavioral health issues, individuals with prior criminal justice involvement, young adults and foster youth experiencing homelessness, and students and their families living on the streets or in unstable housing. The traditional housing subsidy programs have failed to reach many of these households and lack the supportive services necessary to successfully serve these individuals and families. In 2019, KCHA invested nearly $43 million in housing assistance into these targeted programs.

- **HOUSING STABILITY FUND.** This fund provided emergency financial assistance to qualified residents to cover housing costs, including rental assistance, security deposits, and utility support. Under the program design, a designated agency partner disburses funding to qualified program participants and screens for eligibility according to the program's guidelines. In 2019,

we awarded emergency assistance to 74 families through this process. As a result of this assistance, all of these families were able to maintain their housing, avoiding the far greater safety net costs that could occur if they became homeless.

- **EDUCATION INITIATIVES.** KCHA continued to actively partner with local education stakeholders to improve outcomes for the 15,140 children who lived in our federally assisted housing in 2019. Educational outcomes, including improved attendance, grade-level performance, and graduation, are an integral part of our core mission. By investing in the next generation, we intend to combat intergenerational cycles of poverty that can persist among the families we serve. In 2019, we began program planning and the co-design process for the Neighborhood Early Learning Connectors pilot. This program employs eight resident interns to connect KCHA families to local programming in order to support healthy child development.

- **INCREASE ACCESS TO HEALTHCARE THROUGH PARTNERSHIPS AND COLLABORATIVE PLANNING**. KCHA partnered with the local healthcare delivery system to support residents in accessing the services they need to maintain housing stability and a high quality of life. In 2019, KCHA continued to develop our health and housing strategy by improving service coordination for residents with complex health needs, increasing resident access to health services, and identifying opportunities for impacting the social determinants of health. Overall, this effort enabled KCHA residents to access new health services made available through Medicaid waivers and expansion, funding opportunities from local sources, and philanthropic supports.

- **ACQUISITION AND PRESERVATION OF AFFORDABLE HOUSING.** We continued to use MTW resources to preserve affordable housing that is at risk of for-profit redevelopment, and to create additional affordable housing opportunities in partnership with state and local jurisdictions. When possible, we have been acquiring additional housing adjacent to existing KCHA properties in emerging and current high-opportunity neighborhoods where banked public housing subsidies can be utilized. In 2019, KCHA purchased Emerson Apartments, Hampton Greens, Juanita View, Kendall Ridge, Kirkland Heights, and Riverstone, adding 1,356 units to our inventory of affordable housing.

- **LONG-TERM VIABILITY OF OUR GROWING PORTFOLIO.** KCHA used our single-fund flexibility to reduce outstanding financial liabilities and protect the long-term viability of our inventory. Single-fund flexibility allows us to make loans in conjunction with Low Income Housing Tax Credit (LIHTC) financing to recapitalize properties in our federally subsidized inventory. MTW resources that financed a portion of the redevelopment of the Greenbridge HOPE VI site

remained outstanding. This financing will be repaid through proceeds from land sales as the build-out of this 100-acre, 900 unit site continues. MTW funds also supported energy conservation measures as part of our Energy Performance Contracting project, with energy savings over the life of the contracts repaying the loan. MTW working capital also provided an essential backstop for outside debt, addressing risk concerns of lenders, enhancing our credit worthiness, and enabling our continued access to private capital markets. S&P Global reaffirmed KCHA's AA issuers rating at the end of 2019.

- **REMOVAL OF THE CAP ON VOUCHER UTILIZATION.** This initiative enables us to utilize savings achieved through MTW initiatives to over-lease and provide HCV assistance to more households than normally permissible under our HUD-established baseline. Our cost containment from a multi-tiered, ZIP Code-based payment standard system, operational efficiencies, and other policy changes have been critical in helping us respond to the growing housing needs of the region's extremely low-income households. Despite ongoing uncertainties around federal funding levels, we continue to use MTW program flexibility to support housing voucher issuance above HUD baseline levels.

B. LOCAL ASSET MANAGEMENT PLAN

Has the PHA allocated costs within statute during the plan year?	No
Has the PHA implemented a local asset management plan (LAMP)?	Yes
Has the PHA provided a LAMP in the appendix?	Yes

In FY 2008, as detailed in the MTW Annual Plan for that year and adopted by our Board of Commissioners under Resolution No. 5116, KCHA developed and implemented our own local funding model for Public Housing and HCV using our MTW block grant authority. Under our current agreement, KCHA's Public Housing Operating, Capital, and HCV funds are considered fungible and may be used interchangeably. In contrast to 990.280 regulations, which require transfers between projects only after all project expenses are met, KCHA's model allows budget-based funding at the start of the fiscal year from a central ledger, not other projects. We maintain a budgeting and accounting system that gives each property sufficient funds to support annual operations, including allowable fees. Actual revenues include those provided by HUD and allocated by KCHA based on annual property-based budgets. As envisioned, all block grants are deposited into a single general ledger fund.

SECTION VI
ADMINISTRATIVE

A. HUD REVIEWS, AUDITS, OR PHYSICAL INSPECTION ISSUES

The results of HUD's monitoring visits, physical inspections, and other oversight activities have not identified any deficiencies. The average REAC score for KCHA's Public Housing inventory in 2019 was 96.25.

B. RESULTS OF LATEST KCHA-DIRECTED EVALUATIONS

In 2019, KCHA continued to expand and enhance our internal program design and evaluation capacity while leveraging external research partnerships. We continued implementation of the Creating Moves to Opportunity mobility study in collaboration with research partners from Harvard, Massachusetts Institute of Technology, Johns Hopkins, and other universities. Results from the first phase of this project can be found in Appendix D. We also began a research project with Johns Hopkins University to explore the effect of receiving housing assistance on health outcomes; continued collaborations with the University of Washington to understand the characteristics and experiences of residents moving with Housing Choice Vouchers; and conducted internal assessments of several of our programs. Analysis and reporting for these efforts are underway and will be made public when available.

C. MTW STATUTORY REQUIREMENT CERTIFICATION

Certification is attached as Appendix A.

D. MTW ENERGY PERFORMANCE CONTRACT (EPC) FLEXIBILITY DATA

EPC data is attached as Appendix F.

APPENDIX A

CERTIFICATION OF STATUTORY COMPLIANCE

Certification of Statutory Compliance

On behalf of the King County Housing Authority (KCHA), I certify that the Agency has met the three statutory requirements of the Restated and Amended Moving to Work Agreement entered into between the Department of Housing and Urban Development (HUD) and KCHA on March 13, 2009, and extended on September 19, 2016. Specifically, KCHA has adhered to the following requirements of the MTW demonstration during FY 2019:

- o At least 75 percent of the families assisted by KCHA are very low-income families, as defined in section 3(b)(2) of the 1937 Act;
- o KCHA has continued to assist substantially the same total number of eligible low-income families as would have been served absent participation in the MTW demonstration; and
- o KCHA has continued to serve a comparable mix of families (by family size) as would have been served without MTW participation.

8/17/20

_____   _____

STEPHEN J. NORMAN   DATE
Executive Director

APPENDIX B
KCHA'S LOCAL ASSET MANAGEMENT PLAN

As detailed in KCHA's FY 2008 MTW Annual Plan and adopted by the Board of Commissioners under Resolution No. 5116, KCHA has implemented a Local Asset Management Plan that considers the following:

- o KCHA will develop its own local funding model for Public Housing and Section 8 using its block grant authority. Under its current agreement, KCHA can treat these funds and CFP dollars as fungible. In contrast to 990.280 regulations, which require transfers between projects after all project expenses are met, KCHA's model allows budget-based funding at the start of the fiscal year from a central ledger, not other projects. KCHA will maintain a budgeting and accounting system that gives each property sufficient funds to support annual operations, including allowable fees. Actual revenues will include those provided by HUD and allocated by KCHA based on annual property-based budgets. As envisioned, all block grants will be deposited into a single general ledger fund. This will have multiple benefits.

  - KCHA gets to decide subsidy amounts for each public housing project. It's estimated that HUD's new funding model has up to a 40% error rate for individual sites. This means some properties get too much, some too little. Although funds can be transferred between sites, it's simpler to determine the proper subsidy amount at the start of the fiscal year rather than when shortfalls develop. Resident services costs will be accounted for in a centralized fund that is a sub-fund of the single general ledger, not assigned to individual programs or properties.

  - KCHA will establish a restricted public housing operating reserve equivalent to two months' expenses. KCHA will estimate subsidies and allow sites to use them in their budgets. If the estimate exceeds the actual subsidy, the difference will come from the operating reserve. Properties may be asked to replenish this central reserve in the following year by reducing expenses, or KCHA may choose to make the funding permanent by reducing the unrestricted block grant reserve.

- Using this approach will improve budgeting. Within a reasonable limit, properties will know what they have to spend each year, allowing them autonomy to spend excess on "wish list" items and carefully watch their budgets. The private sector doesn't wait until well into its fiscal year to know how much revenue is available to support its sites.

o Reporting site-based results is an important component of property management and KCHA will continue accounting for each site separately; however, KCHA, as owner of the properties will determine how much revenue will be included as each project's subsidy. All subsidies will be properly accounted for under the MTW rubric.

o Allowable fees to the central office cost center (COCC) will be reflected on the property reports, as required. The MTW ledger won't pay fees directly to the COCC. As allowable under the asset management model, however, any subsidy needed to pay legacy costs, such as pension or terminal leave payments and excess energy savings from the Authority's ESCO, may be transferred from the MTW ledger or the projects to the COCC.

o Actual Section 8 amounts needed for housing assistance payments and administrative costs will be allotted to the Housing Choice Voucher program, including sufficient funds to pay asset management fees. Block grant reserves and their interest earnings will not be commingled with Section 8 operations, enhancing budget transparency. Section 8 program managers will become more responsible for their budgets in the same manner as public housing site managers.

o Block grant ledger expenses, other than transfers out to sites and Section 8, will be those that support MTW initiatives, such as the South County Pilot or resident self-sufficiency programs. Isolating these funds and activities will help KCHA's Board of Commissioners and its management keeps track of available funding for incremental initiatives and enhances KCHA's ability to compare current to pre-MTW historical results with other housing authorities that do not have this designation.

o In lieu of multiple submissions of Operating Subsidy for individual Asset Management Projects, KCHA may submit a single subsidy request using a weighted average project expense level (WAPEL) with aggregated utility and add-on amounts.

APPENDIX C
ACTUAL EXISTING PROJECT-BASED VOUCHERS

Project-based Voucher Contracts

Property Name	Number of Project-based Vouchers	Status as of End of 2019	Population Served	RAD?
Parkview Group Home	1	Leased	Disabled Individuals	No
Inland Empire Group Home	1	Leased	Disabled Individuals	No
Inland Empire Group Home	1	Leased	Disabled Individuals	No
Inland Empire Group Home	1	Leased	Disabled Individuals	No
Inland Empire Group Home	1	Leased	Disabled Individuals	No
Parkview Group Home	1	Leased	Disabled Individuals	No
Inland Empire Group Home	1	Leased	Disabled Individuals	No
Parkview Group Home	1	Leased	Disabled Individuals	No
Parkview Group Home	1	Leased	Disabled Individuals	No
Inland Empire Group Home	1	Leased	Disabled Individuals	No
Inland Empire Group Home	1	Leased	Disabled Individuals	No
Inland Empire Group Home	1	Leased	Disabled Individuals	No
Petter Court	4	Leased	Homeless Families	No
Kensington Square	6	Leased	Homeless Families	No
Villa Esperanza	23	Leased	Homeless Families	No
Villa Capri	5	Leased	Homeless Families	No
Plum Court	10	Leased	Low Income Families	No
Enumclaw Fourplex	5	Leased	Homeless Families	No
Friends of Youth Shared Housing	2	Leased	Homeless Young Adults	No
The Willows	15	Leased	Homeless Families	No
Chalet	5	Leased	Low Income Families	No
Francis Village	10	Leased	Homeless Young Families	No
Independence Bridge	24	Leased	Homeless Young Adults	No
Chalet	4	Leased	Homeless Families	No
August Wilson Place	8	Leased	Homeless Veterans	No
Lauren Heights	5	Leased	Homeless Families	No
City Park Townhomes	11	Leased	Homeless Families	No
Burien Heights	15	Leased	Homeless Young Adults	No
Evergreen Court Apartments	15	Leased	Low Income Seniors	No

Project-based Voucher Contracts

Village at Overlake Station	8	Leased	Disabled Individuals	No
Summerfield Apartments	13	Leased	Low Income Families	No
Phoenix Rising	24	Leased	Homeless Young Adults	No
Sophia's Home - Timberwood	2	Leased	Homeless Individuals	No
Sophia's Home - Woodside East	4	Leased	Homeless Individuals	No
Woodland North	10	Leased	Homeless Veterans	No
Passage Point	46	Leased	Homeless Families	No
Family Village	10	Leased	Homeless Families	No
Discovery Heights	10	Leased	Homeless Individuals	No
Unity Village of White Center	6	Leased	Homeless Families	No
Andrew's Glen	10	Leased	Low Income Families	No
Eernisse	13	Leased	Low Income Families	No
Avondale Park	43	Leased	Homeless Families	No
Woodside East	23	Leased	Low Income Families	No
Landmark Apartments	28	Leased	Low Income Families	No
Timberwood	20	Leased	Low Income Families	No
Newporter Apartments	22	Leased	Low Income Families	No
Village at Overlake Station	12	Leased	Low Income Families	No
Harrison House	48	Leased	Low Income Seniors	No
Valley Park East & West	12	Leased	Homeless Families	No
Valley Park East & West	16	Leased	Low Income Families	No
Valley Park East & West	2	Leased	Disabled Individuals	No
Heritage Park	15	Leased	Homeless Families	No
August Wilson Place	8	Leased	Homeless Families	No
Appian Way	6	Leased	Homeless Families	No
Seola Crossing I & II	63	Leased	Low Income Families	No
Rose Crest	10	Leased	Homeless Families	No
Rose Crest	8	Leased	Homeless Families	No
Copper Lantern	4	Leased	Homeless Individuals	No
Copper Lantern	7	Leased	Low Income Families	No
Summerwood	25	Leased	Low Income Families	No
Creston Point	5	Leased	Homeless Families	No

Project-based Voucher Contracts

Joseph House	10	Leased	Low Income Seniors	No
Johnson Hill	8	Leased	Low Income Families	No
Velocity Apartments	8	Leased	Homeless Families	No
Compass Housing Renton	58	Leased	Homeless Veterans	No
Family Village	26	Leased	Low Income Families	No
William J. Wood Veterans House	44	Leased	Homeless Veterans	No
Timberwood Apartments	18	Leased	Homeless Veterans	No
Francis Village	10	Leased	Homeless Veterans	No
Bellepark East	12	Leased	Low Income Families	No
Laurelwood Gardens	8	Leased	Low Income Families	No
Woodland North	5	Leased	Low Income Families	No
Carriage House	13	Leased	Homeless Veterans	No
Villages at South Station	20	Leased	Homeless Veterans	No
Cove East Apartments	16	Leased	Homeless Veterans	No
Ronald Commons	8	Leased	Homeless Veterans	No
Velocity Apartments	8	Leased	Homeless Veterans	No
Providence John Gabriel House	8	Leased	Low Income Seniors	No
Kirkland Avenue Townhomes	2	Leased	Homeless Veterans	No
Athene	8	Leased	Low Income Seniors	No
Francis Village	3	Leased	Low Income Families	No
Houser Terrace	25	Leased	Homeless Veterans	No
NIA Apartments	42	Leased	Low Income Seniors	No
Spiritwood Manor	128	Leased	Low Income Families	No
Birch Creek	262	Leased	Low Income Families	No
Salmon Creek	9	Leased	Low Income Families	No
Newport	23	Leased	Low Income Families	No
Eastbridge	31	Leased	Low Income Families	No
Hidden Village	78	Leased	Low Income Families	No
Heritage Park	36	Leased	Low Income Families	No
Alpine Ridge	27	Leased	Low Income Families	No
Bellevue House # 1	1	Leased	Homeless Families	No
Eastridge House	40	Leased	Low Income Seniors/Disabled	No

Project-based Voucher Contracts

Evergreen Court	30	Leased	Low Income Families	No
Green Leaf	27	Leased	Low Income Families	No
Avondale Manor	20	Leased	Low Income Families	No
Bellevue House # 2	1	Leased	Homeless Families	No
Bellevue House # 3	1	Leased	Homeless Families	No
Bellevue House # 4	1	Leased	Homeless Families	No
Bellevue House # 5	1	Leased	Homeless Families	No
Bellevue House # 6	1	Leased	Homeless Families	No
Bellevue House # 7	1	Leased	Homeless Families	No
Bellevue House # 8	1	Leased	Homeless Families	No
Campus Court I	12	Leased	Low Income Families	No
Campus Court II (House)	1	Leased	Low Income Families	No
Cedarwood	25	Leased	Low Income Families	No
Federal Way House #1	1	Leased	Low Income Families	No
Federal Way House #2	1	Leased	Low Income Families	No
Federal Way House #3	1	Leased	Low Income Families	No
Forest Grove	25	Leased	Low Income Families	No
Glenview Heights	10	Leased	Low Income Seniors/Disabled	No
Juanita Court	30	Leased	Low Income Families	No
Juanita Trace I & II	39	Leased	Low Income Families	No
Kings Court	30	Leased	Low Income Families	No
Kirkwood Terrace	28	Leased	Low Income Families	No
Pickering Court	30	Leased	Low Income Families	No
Riverton Terrace I	30	Leased	Low Income Families	No
Shoreham	18	Leased	Low Income Families	No
Victorian Woods	15	Leased	Low Income Families	No
Vista Heights	30	Leased	Low Income Families	No
Wellswood	30	Leased	Low Income Families	No
Young's Lake	28	Leased	Low Income Families	No
Sophia's Home - Bellepark East	1	Leased	Homeless Individuals	No
Green River Homes	59	Leased	Low Income Families	No
Bellevue Manor	66	Leased	Low Income Seniors/Disabled	No

Project-based Voucher Contracts

Vashon Terrace	16	Leased	Low Income Seniors/Disabled	No
Northwood Square	24	Leased	Low Income Families	No
Patricia Harris Manor	41	Leased	Low Income Seniors/Disabled	No
Gilman Square	25	Leased	Low Income Families	No
Woodcreek Lane	20	Leased	Low Income Families	No
Southwood Square	104	Leased	Low Income Families	No
Foster Commons	4	Leased	Homeless Families	No
Linden Highlands	2	Leased	Homeless Families	No
Arcadia	5	Issued through AHAP	Homeless Young Adults	No
Renton Commons	12	Leased	Homeless Families	No
Renton Commons	14	Leased	Homeless Veterans	No
30Bellevue	23	Leased	Mainstream/NED	No
30Bellevue	8	Leased	Low Income Families	No
Kent PSH	36	Issued through AHAP	Homeless Veterans	No
Kent PSH	44	Issued through AHAP	Homeless and Disabled	No

APPENDIX D
EVALUATIONS

Creating Moves to Opportunity:
Experimental Evidence on Barriers to Neighborhood Choice[*]

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Abstract

Low-income families in the United States tend to live in neighborhoods that offer limited opportunities for upward income mobility. One potential explanation for this pattern is that families prefer such neighborhoods for other reasons, such as affordability or proximity to family and jobs. An alternative explanation is that they do not move to high-opportunity areas because of barriers that prevent them from making such moves. We test between these two explanations using a randomized controlled trial with housing voucher recipients in Seattle and King County. We provided services to reduce barriers to moving to high-upward-mobility neighborhoods: customized search assistance, landlord engagement, and short-term financial assistance. Unlike many previous housing mobility programs, families using vouchers were not required to move to a high-opportunity neighborhood to receive a voucher. The intervention increased the fraction of families who moved to high-upward-mobility areas from 15% in the control group to 53% in the treatment group. Families induced to move to higher opportunity areas by the treatment do not make sacrifices on other aspects of neighborhood quality, tend to stay in their new neighborhoods when their leases come up for renewal, and report higher levels of neighborhood satisfaction after moving. These findings imply that most low-income families do not have a strong preference to stay in low-opportunity areas; instead, barriers in the housing search process are a central driver of residential segregation by income. Interviews with families reveal that the capacity to address each family's needs in a specific manner – from emotional support to brokering with landlords to customized financial assistance – was critical to the program's success. Using quasi-experimental analyses and comparisons to other studies, we show that more standardized policies – increasing voucher payment standards in high-opportunity areas or informational interventions – have much smaller impacts. We conclude that redesigning affordable housing policies to provide customized assistance in housing search could reduce residential segregation and increase upward mobility substantially.

I Introduction

Recent research has established that children's outcomes in adulthood vary substantially across neighborhoods and that moving to higher opportunity neighborhoods earlier in childhood improves children's outcomes significantly (Chetty, Hendren, and Katz 2016; Chetty and Hendren 2018a; Chyn 2018; Laliberté 2018). Yet the vast majority of low-income families in the United States, including those receiving Housing Choice Vouchers from the government, live in low-opportunity neighborhoods (Metzger 2014; Mazzara and Knudsen 2019). This pattern prevails even though many families live near areas with similar or lower rental costs that historically have produced much better economic outcomes for children (Chetty et al. 2018). Why don't more low-income families take advantage of these options and move to opportunity? More broadly, what explains the segregation of low-income families into high-poverty, low-opportunity neighborhoods in many cities?

One potential explanation is that low-income families prefer to stay in low-opportunity areas because these neighborhoods have other valuable amenities, such as shorter commutes, proximity to family and community, or greater racial and ethnic diversity. An alternative explanation is that low-income families do not move to high-opportunity areas because of barriers, such as a lack of information, frictions in the search process (e.g., a lack of credit or liquidity), or a reluctance among landlords to rent to them. Distinguishing between these two explanations is important for understanding the drivers of residential segregation as well as for designing affordable housing policies to address any barriers that limit moves to opportunity.[1]

We test between these explanations using a randomized controlled trial, implemented in collaboration with the Seattle and King County housing authorities, that sought to reduce the barriers families may face in moving to higher opportunity areas. The trial involved 430 families who applied for and were issued Housing Choice Vouchers, which provide $1,540 per month in rental assistance on average to eligible low-income families. The sample consisted of families with a child below age 15 issued vouchers between April 2018 and April 2019 in the Seattle and King County area, who had a median household income of $19,000.

We began by defining "high-opportunity" neighborhoods as Census tracts that have historical rates of upward income mobility in approximately the top third of tracts in the Seattle and King County area, drawing on data from a preliminary version of the Opportunity Atlas. On aver-

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1. An extensive literature in sociology and economics has studied the determinants of residential choice and segregation over the past fifty years. We discuss how our study contributes to this literature at the end of the introduction.

age, children who grow up in low-income (25th percentile) families in the areas we designated as "high opportunity" earn about 13.9% ($6,800 per year) more as adults than those who grow up in low-opportunity areas in families with comparable incomes. Historically, around 12% of voucher recipients in Seattle and King County leased units in the areas we define as high opportunity.

Families who applied for housing vouchers were randomly assigned (with 50% probability) to a control group or treatment group. The value of the vouchers and the restrictions governing their use followed pre-existing housing authority regulations and did not differ between the treatment and control groups. Families in the control group received standard briefings on how to use their vouchers. Families in the treatment group were offered a supplementary program designed to help them lease units in high-opportunity areas called Creating Moves to Opportunity (CMTO). The CMTO program consisted of three components: customized search assistance, landlord engagement, and short-term financial assistance. The total cost of the program was about $2,660 per family.[2] Search assistance was provided by a non-profit group and included information about high-opportunity areas, assistance in preparing rental documents, guidance in addressing issues in a family's credit and rental history, and help in identifying available units and connecting with landlords in high-opportunity areas. On average, CMTO staff spent about six hours working with each family. The staff also engaged directly with landlords in opportunity areas to encourage them to lease units to CMTO families and expedite the lease-up process. Landlords who leased to CMTO families were additionally offered an insurance fund for damages to the unit above and beyond the security deposit. Finally, financial assistance included funds administered by the program staff for security deposits and application fees, averaging $1,000 per family. Importantly, all families in the treatment group had the option to use their housing voucher in *any* neighborhood within the housing authorities' jurisdictions (although CMTO services were only provided in high-opportunity areas).[3]

The CMTO treatment increased the share of families who leased units in high-opportunity neighborhoods by 37.9 percentage points (s.e. = 4.2 pp, $p < 0.001$), from 15.1% in the control

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2. This $2,660 figure is the up-front cost of the program services; it excludes downstream costs incurred in the form of higher housing voucher payments that were incurred by housing authorities because treatment group families moved to more expensive neighborhoods. See Section III.C for details.

3. This element of neighborhood choice is the critical distinction between CMTO and the Moving to Opportunity (MTO) experiment implemented in the 1990s, which *required* that families in the experimental group move to low-poverty Census tracts to receive a voucher. Studies of the MTO experiment have shown that families who moved to higher-opportunity areas as required by the experimental treatment had improved mental health and well-being and better economic outcomes for their children (Kling, Liebman, and Katz 2007; Chetty, Hendren, and Katz 2016; Ludwig et al. 2012). The focus of the CMTO experiment is on why families receiving vouchers without such requirements typically do not live in such areas.

group to 53.0% in the treatment group. We find similarly large treatment effects on moves to high-opportunity areas across several subgroups, including racial minorities, immigrant families, and the lowest-income households in the sample. CMTO changed *where* families moved, not *whether* they moved at all with a Housing Choice Voucher: in both the treatment and control groups, approximately 87% of families leased a unit somewhere using their housing vouchers. The fact that families are able to use their vouchers to find housing at similar rates even without CMTO services shows that the program did not induce families to move to high-opportunity areas simply to use their vouchers; rather, it expanded families' neighborhood choice sets.

Families in the treatment group moved to many different Census tracts across the Seattle and King County area: the 118 families in the treatment group who moved to a high-opportunity area live in 46 different tracts, mitigating the concern that the program might simply reconcentrate low-income families in new neighborhoods (Clark 2008). Families who moved to high-opportunity areas chose neighborhoods whose characteristics are representative of high-opportunity areas overall, which tend to have lower poverty rates, higher shares of two-parent families, slightly lower shares of non-white residents, and lower population density. Families who moved to opportunity did not gravitate to lower-opportunity areas within the set of neighborhoods designated as "high opportunity"; in fact, several families moved to the highest-upward-mobility neighborhoods in Seattle and King County.

Families induced to move to high-opportunity areas by the CMTO treatment tend to stay in higher-opportunity areas when their leases come up for renewal (one year after their initial move). Among families who leased up at least one year earlier, 60.0% of families in the treatment group live in high-opportunity areas, compared with 19.1% in the control group. These rates are almost the same as those observed at initial lease up, showing that the treatment effect on neighborhood choice is highly persistent over one year. Furthermore, in a post-move survey of a randomly selected subset of families, families in the treatment group express higher rates of neighborhood satisfaction and a greater likelihood of wanting to stay in their new neighborhoods. For instance, 64.2% of families in the treatment group report being "very satisfied" with their new neighborhood, compared with 45.5% in the control group. These findings suggest that families in the treatment group are likely to remain in high-opportunity areas in the long run.

Families who moved to high-opportunity areas do not appear to have made sacrifices on other observable neighborhood amenities, such as distance to their prior location or proximity to jobs, nor in the quality of the unit they rent, as measured by its size, age, or other characteristics.

This may be because Seattle and King County had a tiered payment standard for vouchers that offered higher payments for more expensive neighborhoods (a policy introduced independently of the CMTO experiment), allowing families to access more expensive units in high-opportunity areas. Indeed, the average monthly rent was $188 higher for families assigned to the CMTO treatment group than the control.

Our experimental results imply that most low-income families do not have a strong preference to stay in low-opportunity areas; rather, barriers to moving to high-opportunity areas play a central role in explaining neighborhood choice and residential sorting patterns. Explaining our findings with a frictionless model in which neighborhood choices are determined purely by preferences would require that a large group of families happen to be close to indifferent between low- and high-opportunity areas. In particular, our treatment effect estimates conditional on leasing up imply that 43% of families must have a willingness to pay (WTP) to live in a low-opportunity area between $0 and $2,660 (the per-family cost of the CMTO program).[4] This is implausible both because we find uniformly large treatment effects across subgroups and because the marginal families induced to move to high-opportunity areas by the intervention report much higher levels of neighborhood satisfaction after moving.[5] A more plausible explanation of the data is that many low-income families have strong preferences to move to high-opportunity areas, but are prevented from doing so by barriers in the search process. Such barriers could potentially be captured in a reduced-form manner by incorporating sufficiently large housing search costs into the model (e.g., Wheaton 1990; Kennan and Walker 2011), but unpacking what these search costs are is critical for developing policies that could reduce these costs and help families find housing in their preferred neighborhoods.

To understand the barriers families face and the mechanisms through which CMTO addressed them, we conducted 161 in-depth (on average, two hour) interviews with a stratified random sample of families in the treatment and control groups during and after their move. Many families reported that they had limited time and resources to search for housing, as they were facing challenges such as domestic violence, mental health conditions, or holding multiple jobs while caring for children as single parents. Families identified five key mechanisms through which the CMTO program helped them move to opportunity: providing emotional support, increasing motivation to move to a high-opportunity neighborhood, streamlining the search process by helping to prepare rental applications

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4. Adding the 18% who move to opportunity in the control group implies that a majority of the population is willing to pay at most $2,660 to live in a low-opportunity area.

5. Similar reasoning suggests that the scarcity of voucher holders in high-opportunity areas is also unlikely to be due to strong preferences for non-voucher holders among landlords. In particular, any such preference must be small enough to be overcome by the CMTO treatment for a large fraction of landlords.

and "rental resumes," providing direct brokerage services and representation with landlords, and providing crucial and timely assistance for auxiliary payments that could prevent a lease from being signed. The qualitative interviews show that the CMTO program's ability to respond to each family's specific needs and circumstances was critical to the program's impact. Service utilization was highly heterogeneous across families, with some families relying heavily on search assistance, while others used more financial assistance or took advantage of direct landlord referrals.

Consistent with the importance of customized services, we find that CMTO increased access to high-opportunity neighborhoods substantially more than other more standardized policies with similar goals. One prominent approach, termed Small Area Fair Market Rents, is to provide financial incentives to help families move to higher-opportunity neighborhoods by offering higher voucher payment standards in higher-rent ZIP codes within a metro area (HUD 2016). The King County Housing Authority implemented such a policy in March, 2016. Using a quasi-experimental difference-in-differences design comparing voucher recipients in Seattle vs. King County, we find that King County's change in payment standards had little or no impact on the rate of moves to high-opportunity areas, with an upper bound on the 95% confidence interval of a 7.7 pp increase – an order of magnitude lower than the effects of CMTO. We also study a policy introduced by the Seattle Housing Authority that increased payment standards specifically in high-opportunity neighborhoods (as designated for the CMTO experiment). Again, we find it had a much smaller impact on the rates of moves to high-opportunity areas. Indeed, only 20% of voucher recipients with children moved to high-opportunity areas even after these changes in payment standards were implemented. These findings show that financial incentives are insufficient to induce a high rate of moves to opportunity by themselves (although they may be necessary to facilitate such moves through CMTO-style programs, especially in expensive housing markets).[6]

Another alternative to customized housing search assistance is to provide information in a lower-cost, more standardized manner. Schwartz, Mihaly, and Gala (2017) report results from a randomized trial showing that short-run financial incentives and light-touch counseling had little impact on the rate of moves to higher opportunity areas in Chicago. Bergman, Chan, and Kapor (2019) randomized the provision of information to families about the quality of schools associated with rental units on a website commonly used by voucher holders. The information intervention resulted in moves to units with slightly better neighborhood schools, but had a much smaller impact

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6. Of course, there are many potential goals of affordable housing beyond increasing upward mobility for children, such as providing safe and stable shelter or shorter commutes. Small Area Fair Market Rents could be valuable in achieving these other objectives; our results do not speak to such considerations.

on neighborhood quality than CMTO. Moreover, CMTO greatly increased (by 48 percentage points) the fraction of families who stayed in high-opportunity areas even among those who were living in high-opportunity neighborhoods when they applied for vouchers – families who were presumably informed about those areas. Furthermore, 72% of families felt "good" or "very good" about moving to an opportunity neighborhood even at the point of the baseline survey, before the CMTO intervention began. These results all suggest that information alone does not drive CMTO's impacts and is unlikely to greatly increase moves to opportunity areas by itself.

From a policy perspective, our results imply that redesigning affordable housing programs to facilitate more moves to opportunity could have substantial impacts on residential segregation and intergenerational income mobility. Using data from Chetty et al. (2018), we estimate that the moves from low- to high-opportunity Census tracts induced by CMTO will increase average undiscounted lifetime household incomes by $214,000 (8.4%) for children who move at birth and stay in their new neighborhoods throughout childhood. More broadly, given that low-income families do not have strong preferences for low-opportunity neighborhoods, our results provide support for increasing the availability of affordable housing in higher-opportunity areas through other policies such as the Low Income Housing Tax Credit, project-based units, or changes in zoning regulations.

Although our findings are encouraging for mobility programs that facilitate residential choice, two important caveats should be kept in mind. First, general equilibrium effects could dampen the causal impacts of neighborhoods when families move in or out of them. In practice, the families in CMTO came from a wide variety of neighborhoods and, as noted above, moved to a wide variety of different areas. This dispersion suggests that CMTO (or even scaled-up versions of the program) will not change the characteristics of any neighborhood sufficiently to dampen the benefits of moving to higher opportunity areas. Moreover, most of the families who moved to a high-opportunity area in the CMTO program would have moved to some other neighborhood even absent these services, implying that CMTO does not have any incremental effect on destabilizing the neighborhoods where families were initially living.[7]

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7. If the supply of housing units in each neighborhood is fixed, as is likely the case in the short run, the families induced to move to opportunity by CMTO must displace other families from high-opportunity areas, thereby reducing the aggregate gains from the program. Since the average voucher holder has a lower income than the average family living a high-opportunity area, expanding CMTO would increase the share of low-income families relative to high-income families in high-opportunity neighborhoods. Such reallocations could increase aggregate income since neighborhoods appear to matter less for the outcomes of children in higher-income families (Chetty et al. 2018) and, irrespective of their impacts on total income, may be desirable from a distributional perspective. In the long run, the supply of housing may expand in response to increases in demand in high-opportunity areas induced by the CMTO program. These general equilibrium effects could be quantified following the methods developed in Galiani, Murphy, and Pantano (2015), Davis, Gregory, and Hartley (2018), and Davis et al. (2017).

Second, it remains to be seen whether the findings reported here for the Seattle and King County area generalize to other housing markets. On the one hand, Seattle and King County are tight housing markets in which high-opportunity areas have little affordable housing, suggesting treatment effects could be even larger elsewhere. On the other hand, Seattle may be a market that is conducive to opportunity moves, as it bans source-of-payment discrimination and has other characteristics that may make it easier for lower-income families to find housing in higher-opportunity areas. We hope that other public housing authorities will be able to test similar programs elsewhere, perhaps in the context of the Housing Choice Voucher Mobility Demonstration.

This paper builds on an extensive literature in sociology and economics that has analyzed the role of preferences versus structural barriers as causes of segregation (e.g., Schelling 1971; Kain and Quigley 1975; D. Massey and N. Denton 1987; Sampson 2012; Sharkey 2013; Lareau and Goyette 2014; Krysan and Crowder 2017). Much of this work has focused on racial segregation, highlighting the importance of forces such as discrimination (Yinger 1995; Turner et al. 2013) and a lack of information (Krysan and Bader 2009) in producing segregation despite African Americans' preferences for living in more integrated neighborhoods (e.g. Charles 2005; Emerson, Chai, and Yancey 2001). A smaller body of work has examined the drivers of socioeconomic segregation (e.g., Reardon and Bischoff 2011), which is our primary focus here. Our contributions to this literature are (1) establishing experimentally that barriers have substantial causal effects on neighborhood choice among low-income families; (2) characterizing the barriers at play, showing in particular that they extend beyond racial discrimination, a lack of information, or a lack of financial liquidity and instead involve deeper psychological and sociological constraints; and (3) demonstrating that these barriers can be reduced through feasible modifications of existing government programs.

The paper is organized as follows. Section II summarizes a set of facts on the geography and price of opportunity in Seattle and King County that motivate our intervention. Section III provides institutional background on the housing voucher program and describes our intervention and experimental design. Section IV describes the data we use. Section V reports the experimental results and interprets their implications using a stylized model of neighborhood choice. Section VI presents qualitative evidence on mechanisms. In Section VII, we compare the effects of CMTO to other policies, including changes in payment standards and informational interventions. Section VIII concludes.

II The Geography and Price of Opportunity in Seattle

In this section, we summarize four facts on the geography and price of opportunity that motivate our intervention.[8]

First, children's rates of upward income mobility vary substantially across nearby tracts. Figure 1a plots upward income mobility by Census tract in King County (which includes the city of Seattle and surrounding suburbs) using data from the Opportunity Atlas (Chetty et al. 2018). The map shows the average household income percentile rank at age 35 for children who grew up in low-income (25th percentile) families in the 1978-1983 birth cohorts.[9] There is substantial variation in upward mobility across tracts: the (population-weighted) standard deviation of children's mean income ranks in adulthood across tracts within King County is 4.7 percentiles (approximately $5,175, or 10.3% of mean annual income for children with parents at the 25th percentile).

Second, much of the variation in upward mobility across neighborhoods is driven by the *causal effects* of childhood exposure rather than sorting. Recent studies have established that moving to high-upward-mobility ("high-opportunity") neighborhoods improves children's outcomes in adulthood in proportion to the amount of time they spend growing up there. These studies, summarized in Appendix Figure 1, use research designs ranging from random assignment of vouchers (Chetty, Hendren, and Katz 2016) and quasi-experimental estimates based on variation in the age of children at the time of the move (Chetty et al. 2018; Laliberté 2018) to demolitions of public housing projects (Chyn 2018). They find that approximately two-thirds of the observational variation in upward mobility across tracts is due to causal effects of place.

Third, low-income families are concentrated in lower-opportunity neighborhoods. Even among families that receive rental assistance from the government in the form of housing vouchers, 76.2% of families in Seattle and King County live in tracts with below-median levels of upward mobility. Figure 1a illustrates this fact by showing the 25 most common locations where families with housing vouchers moved between 2015 and 2017 (as a percentage of the total population in each tract). Families are clustered in lower-opportunity tracts (red colors) even though there are often much higher-opportunity tracts nearby.

Fourth, the segregation of low-income families into low-opportunity areas is not simply explained by differences in the price of housing between low- and high-opportunity neighborhoods. Figure

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8. We establish these facts using data from Seattle and King County here, but the same four facts hold systematically in other metro areas across the country.

9. Children are assigned to tracts in proportion to the number of years they spent growing up in that tract until age 23; see Chetty et al. (2018) for further details.

1b plots the upward mobility measure shown in Figure 1a against median rent for a two-bedroom apartment in each tract, using data from the 2012-2015 American Community Survey (ACS) to measure rents. Neighborhoods with higher upward mobility are slightly more expensive: the (low-income count-weighted) correlation between rents and upward mobility is 0.24 within King County. However, there is considerable variation in upward mobility even conditional on rent. Figure 1b highlights the most common tracts where voucher holders lived prior to our experimental intervention and shows that many families could potentially move to "opportunity bargain" neighborhoods that would improve their children's outcomes without having higher rents.[10]

These four facts motivate our central questions: Why don't more low-income families, especially those receiving housing vouchers, move to opportunity? Do families prefer lower-opportunity areas because they have other advantages (e.g., a shorter commute to work or proximity to family)? Or do they prefer higher-opportunity neighborhoods, but face barriers that limit access to such areas? If families face such barriers, how can we intervene to help families live where they would like to live?

III   Intervention and Experimental Design

In this section, we describe our intervention and experimental design. We begin by providing some institutional background on the Housing Choice Voucher (HCV) program. We then discuss our definition of high-opportunity neighborhoods, the services offered in the Creating Moves to Opportunity program, and the design of the randomized controlled trial.

III.A   Background on the Housing Choice Voucher Program

The HCV program provides rental assistance to 2.2 million families in the United States each year, with a total program cost of approximately $20 billion annually (see Collinson, Ellen, and Ludwig (2015) for a comprehensive description of the program). The program is overseen at the federal level by the U.S. Department of Housing and Urban Development (HUD), but is administered by local Public Housing Authorities (PHAs). In this study, we work with two PHAs: the Seattle Housing Authority (SHA), which issues vouchers that can be used in the city of Seattle, and the King County Housing Authority (KCHA), which issues vouchers that can be used in the rest of

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10. Moreover, the housing authorities offer tiered payments standards such that families receive more rental assistance if they find housing in a more expensive area, further reducing the effective cost of housing in high-opportunity neighborhoods.

King County, excluding the cities of Seattle and Renton.[11] Both KCHA and SHA are among a small number of PHAs who participate in HUD's Moving to Work program, which gives them greater flexibility to implement policy pilots than other PHAs.

The HCV program is targeted at low-income families. To be eligible for a voucher from SHA and KCHA, families must have household income below 80% of Area Median Income (AMI).[12] In line with national patterns, more families meet this criteria than the number of vouchers available. The PHAs address this problem by using a lottery to assign families positions on a waiting list. Families who are homeless or who have incomes below 30% of AMI are given priority on the waitlist. In practice, virtually all families who actually receive vouchers fall well below the 30% AMI cutoff, which corresponds to $29,900 for a family of 3. In Seattle and King County, the typical family who received a voucher during our experiment had been on the waitlist for about 1.5 years.

Families eligible for the HCV program are required to contribute 30 to 40% of their annual household income toward rent and utilities. They then receive a housing subsidy that covers the difference between a unit's listed rent and the family's contribution, up to a maximum amount known as the Voucher Payment Standard. In SHA and KCHA, the maximum monthly voucher payments for a two-bedroom unit were $2278 and $2110, respectively.[13]

Once families are issued a voucher, they typically have 4 to 8 months to use the voucher to lease a unit; if the voucher is not used by that point, it is issued to another family. To use a voucher, families must find an interested landlord whose unit passes a quality inspection conducted by the PHA using HUD-defined housing quality standards. After leasing, families remain eligible for the voucher they received indefinitely as long their income remains below eligibility thresholds.

III.B   Defining Opportunity Areas

The first step in our intervention is to designate which areas are "high-opportunity" neighborhoods. Using a preliminary version of the Opportunity Atlas data on upward mobility shown in Figure 1a, we define high-opportunity neighborhoods as Census tracts that have upward mobility in approximately the top third of the distribution across tracts within Seattle and King County.[14] We

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11. Vouchers from both SHA and KCHA may be ported out to use in other areas if they meet certain requirements; this occurs relatively infrequently in practice.

12. Families must also meet certain additional requirements, such as having children or meeting certain age requirements. The full set of requirements are available here for SHA and here for KCHA.

13. In recent years, both SHA and KCHA have adopted tiered payment standards that offer higher payments in more expensive areas to enable families to move to more expensive neighborhoods.

14. We describe the procedure used to construct the preliminary measures of upward mobility in Appendix A. Appendix Figure 2 compares the preliminary estimates to the final Opportunity Atlas estimates shown in Figure 1a (which were released in October 2018) and shows that they are quite similar in practice, with a correlation of 0.74

then adjust these definitions to (1) create contiguous areas and (2) account for potential neighbor-hood change.[15] We create contiguous areas by including Census tracts that fall below the "high opportunity" threshold according to their upward mobility estimates but are surrounded by other high-opportunity areas and excluding high-opportunity Census tracts that are surrounded only by lower-opportunity neighborhoods (see Appendix A for details).

We address neighborhood change by evaluating whether the historical measures of upward mobility in the Opportunity Atlas – which are constructed using data for children who grew up in these areas in the 1980s and 1990s – are good predictors of opportunity for children growing up in those areas today. Chetty et al. (2018) examine the serial correlation of upward mobility measures across cohorts. They find that rates of upward mobility are generally quite stable over time and that historical mobility is more predictive of future mobility than typical contemporaneous proxies for opportunity, such as poverty rates. That said, there are certain parts of Seattle, especially near the center of the city, which have gentrified dramatically in the past ten years and could potentially have very different outcomes today. To evaluate the impacts of this change, we examine the test scores of low-income (free-lunch-eligible) students living in these areas, a plausible leading indicator of upward income mobility. The test-scores of *low-income* students did not change significantly in these areas (although average test scores, pooling all income groups, increased as higher-income families moved in). We conclude based on this analysis that the historical Opportunity Atlas measures provide good predictors of opportunity for low-income families even in these changing neighborhoods.[16] Based on these and other qualitative analyses by the housing authorities, we chose to proceed with the designations largely based on the Opportunity Atlas data.

Figure 2a shows the final set of Census tracts that were designated as "high opportunity" (in the dark shading) after this process. These definitions of high-opportunity areas differ from previous definitions used by SHA and KCHA as well as other practitioners and researchers. Most prior studies define "high-opportunity" areas based on proxies such as the availability of jobs, transit access, crime rates, poverty rates, etc. In contrast, we directly define high-opportunity areas as places where low-income children have had good outcomes historically. We focus on *children* because prior work has shown that neighborhoods have the largest impacts on children's rather than adults'

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across tracts in King County.

15. We also excluded three high-opportunity tracts that already had a large concentration of voucher holders, based on the reasoning that the barriers families face in moving to these areas were already low.

16. Of course, there is no guarantee that this will be the case in other areas where neighborhoods have changed substantially. The Opportunity Atlas data provide a good starting point for predicting upward mobility (which is inherently unobservable) for the current generation of children, but should ideally be complemented with more recent data and qualitative judgment on a case-by-case basis to settle on final definitions of opportunity neighborhoods.

economic outcomes. We focus on their *outcomes* rather than proxies for those outcomes because prior work has shown that observable characteristics such as poverty rates capture only about 50% of the variation in upward mobility across areas.

Figure 2b shows why this distinction matters in practice. The left panel replicates the Opportunity Atlas data from Figure 1a, while the right panel shows the Kirwan Child Opportunity Index (Acevedo-Garcia et al. 2014), a commonly used index constructed by combining education, health, and economic indicators. The two measures have a (population-weighted) correlation of 0.3, leading to several important differences between them. For example, the Kirwan index ranks Capitol Hill and parts of the Ballard neighborhood as high-opportunity areas (given their proximity to jobs), yet these neighborhoods have historically had some of the lowest rates of upward mobility in Seattle. Conversely, there are several areas, such as the eastern part of Kent in King County and the Northeastern part of Seattle, which rate poorly according to the Kirwan index but offer high rates of upward income mobility for low-income children. Such areas often excel on other dimensions that are correlated with upward mobility, such as measures of social capital and family stability, which are typically not incorporated into traditional measures.

Helping families move to high-opportunity areas as defined based on the Opportunity Atlas rather than traditional Kirwan or poverty-rate-based indices is likely to produce larger impacts on upward income mobility for two reasons. First, we estimate that the average high-opportunity area identified as described above using the Opportunity Atlas has a causal effect on upward income mobility that is nearly 40% larger than what one would have obtained if one identified the same number of high-opportunity tracts based on the Kirwan index or poverty rates. Second, neighborhoods that have high rates of upward mobility despite appearing worse on observable dimensions tend to have lower rents (Chetty et al. 2018). As a result, our designation of high-opportunity areas identifies more affordable neighborhoods than traditional Kirwan-type or poverty-rate-based indices, expanding the set of high-opportunity areas that would be affordable to families receiving vouchers.[17]

III.C   The Creating Moves to Opportunity Intervention

In collaboration with our research team, the Seattle and King County Housing Authorities developed a suite of services designed to facilitate moves to high-opportunity neighborhoods, building on

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17. Only 36% of the families who moved to high-opportunity tracts in our treatment group moved to a tract that would have been defined as "high opportunity" had we identified high-opportunity areas as those with the lowest poverty rates, underscoring why the metric for opportunity matters.

formative fieldwork conducted by our partners and lessons from prior mobility and housing search assistance programs such as the Baltimore Regional Housing Program (DeLuca and Rosenblatt 2017), the Abode Program in San Mateo, and other programs (see Table 2 of Schwartz, Mihaly, and Gala 2017). The service model includes three components summarized in Figure 3a: search assistance, landlord engagement, and short-term financial assistance.

Search assistance services were provided by a non-profit group, which provided "family and housing navigators" who contacted families via in-person meetings, phone calls, and text messages. The services included: (1) information about high-opportunity areas and the benefits of moving to such areas for families with young children; (2) help in making rental applications more competitive by preparing rental documents and addressing issues in their credit and rental history; and (3) search assistance to help families identify available units, connect with landlords in opportunity areas, and complete the application process. Importantly, these services were tailored to address the specific issues each family faced: for some families, search assistance focused extensively on application preparation and issues such as credit history, while for others they spent much more time on the search process itself. CMTO staff spent 6 hours directly assisting each family on average, spread throughout the search process from an initial meeting shortly after the family is notified of eligibility for a voucher to the point of lease-up (Figure 3b).

The CMTO staff also engaged directly with landlords in high-opportunity areas by explaining the new program and encouraging them to lease units to CMTO families. Landlords were also offered a damage mitigation (insurance) fund for any damages not covered by the tenant's security deposit incurred within the first 18 months after the start of the lease (up to a limit of $2,000).[18] Through these interactions, the staff were able to identify listings from landlords who indicated they would be willing to rent their units to voucher holders who met certain criteria. This landlord engagement was an important source of listings for families: connections with landlords facilitated by CMTO staff account for 47% of the moves to opportunity neighborhoods in the treatment group. The staff then helped expedite the lease-up process for landlords through rapid property inspections and streamlined paperwork, serving as a liaison between families, landlords, and housing authorities.

Finally, CMTO families were provided with various forms of short-term financial assistance (liquidity) to facilitate the rental process. This included funds for application screening fees, security

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18. To date, no landlords have filed such a claim. Of course, if such expenses are incurred in the future, the effective per voucher cost of CMTO estimated below could rise.

deposits, and any other expenses that arose and were standing in the way of lease-up. Importantly, these payments were customized by staff to address the specific impediments a family faced by the CMTO staff. On average, families in the treatment group received $1,043 in such assistance.

Unlike other mobility programs, such as MTO and the Baltimore Housing Mobility Program, which require families to use their vouchers (at least initially) in opportunity areas, families in CMTO could use their housing voucher in *any* neighborhood within their housing authority's jurisdiction.

Program Costs. The net cost of the CMTO program was approximately $2,660 per family: $1,043 of financial assistance, $1,500 of labor costs for the services, and $118 in additional PHA expenses to administer the program (Table 3). This $2,660 figure is the direct cost of the intervention itself per issued voucher. Because Seattle and King county have tiered payment systems that offer higher voucher payments in more expensive neighborhoods, we estimate that they also incur additional voucher payment costs of $2,630 per year as a result of the treatment group families choosing to move to more expensive neighborhoods (see Section V.D. below). We separate these downstream costs from the cost of program services because they will likely vary substantially across metro areas, depending upon rents and the degree to which payment standards vary across neighborhoods. In future work, it would be useful to analyze how the program could be optimized to support families in moving to less expensive high-opportunity areas ("opportunity bargains") to reduce downstream voucher payment costs.

As another method of scaling the costs of the program, note that the up-front cost of the CMTO program per family who moved to a high-opportunity area is $5,010, which is comparable to previous mobility programs that involve intensive counseling and support. We present a detailed description of these cost calculations, a further breakdown of cost components, and comparisons to the other mobility programs in Appendix B and Appendix Table 1.

III.D   Experimental Design

Our sample frame consists of families who were on the waiting list for a voucher from either KCHA or SHA between April 2018 and February 2019. We further limit the sample to families with at least one child below age 15, taking into account both prior evidence that the benefits of moving to high-opportunity neighborhoods are largest for young children and our definition of high-opportunity areas that focuses specifically on children's outcomes.

The randomized trial was implemented by MDRC with J-PAL North America staff providing

overall project management. The trial was registered in the AEA RCT Registry in March 2018, began on April 3, 2018, and ended with final voucher issuances on April 26, 2019.[19] Families were first invited to an intake appointment, at which point they were offered the option to participate in the CMTO experimental study by consenting and completing a baseline survey. 90% of families who were identified as eligible on a preliminary basis consented to participate in the study.[20] These families were then randomized (with 50% probability, stratified by PHA) into either the CMTO treatment or control groups. A total of 497 families consented to participate in the experiment, of whom 430 met the voucher eligibility requirements and were part of the final experimental sample.

Control group families received the standard services provided by their housing authority, which included a group briefing about how to use the voucher but no specific information about opportunity areas or any search assistance. Treatment group families received the CMTO program described in Section III.C in addition to the briefing and standard support services.

IV   Data

This section describes the data we use for the experimental analysis and the quasi-experimental analysis of changes in payment standards. We draw information from several sources: the administrative records of SHA and KCHA, a baseline survey, a service delivery process management system, tract-level and housing-unit-level data from external sources, and post-move followup surveys and interviews that form the basis for our qualitative analysis. After describing these data sources and key variable definitions, we provide descriptive statistics and test for balance across the treatment and control groups.

IV.A   Data Sources

Housing Authority Administrative Records. The core data we use comes from the PHAs' internal administrative records. We obtained anonymized data on all families issued vouchers from 2015-2019, including post-voucher-issuance outcomes and family characteristics. The key outcomes we study include whether a household issued a voucher successfully leases a unit using the voucher, in what Census tract this lease up occurred, and at what rent. Family characteristics obtained from voucher application forms include gender, race, ethnicity, homeless and disability status, household

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19. From February-May 2018, KCHA and SHA piloted the CMTO program. During this pilot phase, all families with at least one child aged 15 or younger were invited to participate in this pilot and 41 families enrolled.

20. Enrollment rates were approximately 90% across all the subgroups we examine, except that households who do not speak English as a primary language enrolled at a slightly lower 77% rate.

size, income, and address at time of application. Data on lease-ups were obtained up through February 6, 2020, by which point vouchers had either been taken up or had expired for all families who participated in the experiment.

Baseline Survey. We conducted a baseline survey for all families who enrolled in the CMTO experiment after providing informed consent. We collected information on characteristics including the head of household's primary language, birth country, years in the United States, tenure in the Seattle area, education, current housing status, employment status, employment location and commute length, moving and eviction history, receipt of social services, and child care utilization. In addition, we asked about self-reported assessments of current neighborhood satisfaction, motivations to move, opinions of various neighborhoods, and overall happiness. The baseline survey also included information on children, such as their ages, grade levels, school name, special education participation, school satisfaction, and participation in extracurricular activities. The full baseline survey instrument is available here.

Service Delivery. The service providers used a case management system built by MDRC to record data on interactions with households and landlords in real time. For households, the database includes information on the housing search process, contact with the search assistance staff, and take-up of financial assistance. Data on the housing search process includes information on whether the household made goals and completed several tasks: visiting neighborhoods, looking for housing, contacting property owners, completing rental applications, and preparing to move. Data on contact with housing search assistance staff include the date of each contact, the method of contact, who initiated the contact, the location of the contact, the reason for the contact, whether the contact included rental application coaching or visiting a prospective unit, and how long the meeting lasted. Records of financial assistance include the amount and type of financial assistance requested and received. Finally, we also collected information on credit, rental, and criminal histories, savings, childcare availability, smoking status, pet ownership, and neighborhood preferences and priorities.

For landlords, the database contains information on landlord characteristics, outreach efforts, and unit availability. We recorded information about each unit referred to a household by a housing locator, including the outcome of any such referrals.

Housing Unit and Tract Characteristics. We obtain information about the characteristics of the units that families rented from rent reasonableness reports (for KCHA), and Zillow, Redfin, Apartments.com, and King County Property records (for SHA). These data on unit characteristics were linked to CMTO households using a unique household identifier. We were able to obtain

information on unit characteristics for 81% of the units rented by families in our sample. These data include information on unit size, year built, and appliance availability.

We obtain data on the characteristics of the Census tracts to characterize the origin and destination neighborhoods for each family from several sources. We predict the effect of the treatment on children's outcomes in adulthood using three sets of outcome variables from the Opportunity Atlas (Chetty et al. 2018) for children with parents at the 25th percentile of the income distribution: mean household income rank, the incarceration rate, and (for women) the teen birth rate. We measure other Census characteristics such as the poverty rate and racial demographics using the 2013-2017 American Community Survey. Tract-level transit and environmental health indices are drawn from publicly available HUD Affirmatively Furthering Fair Housing (AFFH) data. Test score data by school district are obtained from the Stanford Education Data Archive (Fahle et al. 2017).

Follow-up Survey and Qualitative Interviews. We conducted in-person interviews between December 20, 2018 and February 25, 2020. We contacted a randomly selected subset of experimental participants, stratifying by PHA (SHA, KCHA), treatment status (treatment, control), and lease up status (leased up, still searching). We overweighted families in the treatment group and those still searching for housing to maximize power to learn about mechanisms through which the treatment works during the search process (see Appendix C for details and further information on the design of the qualitative study). At the end of each interview, we asked two questions about their satisfaction with their current neighborhood.

We interviewed 161 families in total, out of 202 who were targeted for inclusion in the qualitative study, for an 80% response rate (Appendix Table 2). Of these 161 families, 130 had leased up at the point of interview and thus have post-move neighborhood satisfaction data. Among the families interviewed post-move, 97 are in the treatment group and 33 are in the control group.

IV.B   Baseline Characteristics and Balance Tests

Table 1 presents summary statistics on the baseline characteristics of the 430 CMTO participants and their origin neighborhoods for the pooled sample and separately for the control and treatment groups.

Baseline Characteristics. Families participating in the CMTO experiment are quite economically disadvantaged (Panel A of Table 1). The median household income of CMTO participants of around $19,000 falls just below the 15th percentile of the national household income distribution (based on data from the 2017 Current Population Survey) and less than one quarter of King

County's median household income in 2017 of over $86,700. Only 5% of the CMTO household heads have a four-year college degree, and 13% were homeless or living in a group shelter at baseline. The vast majority (80%) of the household heads are female and 12% were married at baseline. About half of the CMTO participants (49%) are Black (non-Hispanic), 25% are White (non-Hispanic), about 8% are Hispanic, and 7% are Asian. A little more than a third (35%) of the household heads are immigrants and about a fifth of the participants required a translator for the baseline survey and in-take services. 56% of participants were employed at baseline, and only 28% were working full-time (35 or more hours a week).[21]

Panel B of Table 1 provides information on CMTO participants' attitudes toward moves to higher-opportunity neighborhoods.[22] At baseline, CMTO participants expressed interest in moving to higher opportunity neighborhoods, but were worried about the feasibility of making such moves. Around 80% of households indicated they were comfortable moving to a racially different neighborhood. Over 70% of families indicated that they were willing to move to at least one of three areas we named (Northwest Seattle, Northeast Seattle, and South of Ship Canal for SHA; North King County, East King County, and East Hill Kent for KCHA) that have many high-opportunity neighborhoods. However, only 29% of the CMTO families felt they would find it easy to pay moving expenses to move to a different neighborhood. The primary motivation expressed by CMTO participants for moving to a new neighborhood was better schools (43%), safer neighborhood (22%), and better or bigger home (16%).[23] Few CMTO participants list employment-related motivations for moving to a new neighborhood.

Panel C of Table 1 shows that CMTO families were living at baseline in relatively disadvantaged neighborhoods within King County on several dimensions. The mean poverty rate of the Census tracts in which CMTO families lived was 17% in 2016, as compared to 10.9% for King County. The mean predicted income rank in adulthood of children growing up in a low-income (25th percentile) family was 43.9 (about $35,000) in the baseline neighborhoods of CMTO families, which falls at approximately the 31st percentile of tracts across King County.

Balance Tests. The final column of Table 1 reports p-values for tests of the difference in the

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21. Although CMTO participants have low incomes relative to the median family, they are significantly better off than participants in the Moving to Opportunity experiment (Sanbonmatsu et al. 2011). For example, only 28% of MTO household heads were employed at baseline as compared to 56% of CMTO household heads. Only 3% of CMTO families were living in extremely high-poverty tracts (40% or higher poverty rate) at baseline, as compared to 100% of MTO families.

22. See Appendix Table 10 for the exact questions used to assess these attitudes and the way in which responses were coded.

23. These motivations contrast with the MTO families, where concerns about gangs and violence was the primary motivation to move for most families, while better schools was the primary motivation for a much smaller group.

mean of each variable between the treatment and control groups.[24] The baseline characteristics are generally balanced between the treatment and control groups, as would be expected given random assignment. There is a slightly higher share of individuals with less than a high school degree in the control group and some imbalance in perceptions of neighborhoods and willingness to move to different types of areas. However, an F-test for balance across all the baseline variables shown in Table 1 yields a statistically insignificant p-value of 0.22. We conclude that the pattern of observed differences between the treatment and control groups is consistent with the degree of sampling variation that one would expect given random assignment of treatment status but verify that the main results are robust to the inclusion of controls for baseline characteristics.

The qualitative sample (the subset of households for whom we have post-move neighborhood satisfaction data) remains representative of the full CMTO quantitative sample (Appendix Table 3). There is no evidence of selective attrition from the qualitative sample: rates of response to the followup survey do not vary with treatment status and families who responded to the survey are balanced on observable baseline characteristics (Appendix Tables 2 and 4).

V   Experimental Results

This section presents the main experimental results. We divide our analysis into five parts. First, we analyze how the CMTO treatment affected the rate of moves to high-opportunity areas, the primary outcome specified in our pre-analysis plan. Second, we predict the effects of the treatment on rates of upward income mobility using historical data from the Opportunity Atlas. Third, we examine heterogeneity in treatment effects across subgroups. Fourth, we analyze impacts on other dimensions of neighborhood and unit quality to assess whether families moving to opportunity made sacrifices on other margins. Fifth, we report results on rates of persistence in new neighborhoods and neighborhood satisfaction based on post-move surveys. In the final subsection, we discuss how the experimental findings shed light on the relative importance of preferences vs. barriers in neighborhood choice using a stylized model.

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24. Since randomization was stratified by PHA (Seattle vs. King County), we compute these p-values by regressing the outcome on indicators for treatment status and PHA and report the p-value on the treatment indicator. In practice, since randomization rates were essentially identical in the two PHAs, the resulting difference is very similar to the raw difference in means between the treatment and control group.

V.A   Impacts on Neighborhood Choice

We estimate the treatment effect of CMTO on an outcome y_i (e.g., an indicator for moving to a high-opportunity area) using an OLS regression specification of the form:

$$y_i = \alpha + \beta Treat_i + \delta KCHA_i + \gamma X_i + \epsilon_i \qquad (1)$$

where Treat is an indicator variable for being randomly assigned to the treatment group, KCHA is an indicator for receiving a voucher from the King County Housing Authority (as opposed to the Seattle Housing Authority), and X is a vector of baseline covariates.

In our baseline specifications, we include the KCHA indicator (since randomization occurred within each housing authority) but no additional covariates X. In supplemental specifications, we evaluate the sensitivity of our estimates to the inclusion of the baseline covariates listed in Table 1. Including these additional covariates has little impact on the estimates, as expected given that the covariates are balanced across the treatment and control groups.

Figure 4a shows the effect of the CMTO program on the fraction of families who rent units in high-opportunity areas using their housing vouchers. To facilitate visualization, we plot the control group mean (pooling all control group families across the two housing authorities) and the control group mean plus the estimated treatment effect β from equation (1). The CMTO intervention increased the share of families moving to high-upward-mobility (opportunity) areas by 37.9 percentage points (s.e. $= 4.2$, $p < 0.001$) from 15.1% in the control group to 53.0% in the treatment group.[25] The 15.1% rate of moves to high-opportunity areas in the control group is similar to historical rates (Figure 4a), suggesting that the high rate of opportunity moves in the treatment group did not crowd out moves to opportunity areas that control group families would have made.[26]

In Figure 4b, we analyze whether the CMTO program affected overall lease-up rates, a secondary outcome in our pre-analysis plan. This figure replicates Figure 4a, changing the outcome to an indicator for leasing up anywhere (not just in a high-opportunity area). The lease-up rates are very similar and statistically indistinguishable across the treatment group (87.4%) and control

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25. These estimates are based on 427 families; we exclude 3 households whose voucher was transferred to other PHAs shortly after voucher issuance (and whose information we lost thereafter) here and throughout the analysis below.

26. In particular, if there are a small number of units available in high-opportunity neighborhoods, the increased success of CMTO treatment group families in leasing those units could come at the expense of other voucher holders who would have gotten the units. This does not appear to occur in practice, presumably because the marginal family competing for housing in a high-opportunity neighborhood is typically not a voucher holder.

group (85.9%). The fact that lease-up rates were quite high even in the control group shows that CMTO's impacts are not simply driven by providing services that enable families to use their vouchers (e.g., landlord referrals) and steering them to certain areas as a condition for receiving these services. Rather, CMTO changed *where* families chose to live by reducing barriers to leasing a unit in high-opportunity areas in particular.

Conditional on leasing up, 60.7% of families leased units in high-opportunity areas in the treatment group, compared with 17.6% in the control group (Figure 4c). Hence, if all families were to receive CMTO services and treatment effects remained stable, we would expect 60.7% (rather than the current 17.6%) of families using vouchers to live in high-opportunity areas in steady-state.

Figure 5 maps the neighborhoods to which treatment and control families moved (among those who leased a unit using their voucher). While control group families are concentrated in lower-opportunity neighborhoods in the southern and western parts of the metro area, treatment group families are widely dispersed across high-opportunity neighborhoods.[27] The 118 treatment group families in our sample who moved to an opportunity area spread out across 46 distinct Census tracts. The fact that the CMTO treatment induces families to move to a diffuse set of high-opportunity areas reduces the risk that the predicted gains from moving to a higher-opportunity neighborhood will be diminished by changes in neighborhood composition. To see this, suppose the CMTO program were scaled up to include all families with children who currently receive Housing Choice Vouchers in Seattle and King County. If families were to move to Census tracts at the same rates as in our treatment group, the CMTO program would increase the number of voucher holding households as a fraction of total households by about 7.2 percentage points in the median high-opportunity tract to which CMTO families move.

V.B   Predicted Impacts on Upward Mobility

How do the changes in neighborhood choices induced by CMTO affect children's future outcomes? Answering this question directly will require following children over time. However, we can predict the impacts of the moves induced by the CMTO program on children's future outcomes using the historical measures of upward mobility from the Opportunity Atlas (under our maintained assumption that rates of upward mobility will not change over time).

As specified in our pre-analysis plan, we measure upward mobility as the predicted adult household income rank for children with parents at the 25th percentile, drawn directly from the publicly

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27. At the point of voucher application, most treatment and control families are concentrated in South and West Seattle (Appendix Figure 3).

available Opportunity Atlas data.[28] The treatment effect on this measure of upward mobility is an increase of 1.6 percentile ranks (s.e. $= 0.4$, $p < 0.001$), from 44.5 (roughly an income of \$36,000 at age 34) in the control group to 46.1 (\$37,800) in the treatment group (Figure 4d).[29] Families in the treatment group also moved to neighborhoods with lower predicted teen birth rates and incarceration rates (Appendix Figure 4).

Recent studies (Andrews, Kitagawa, and McCloskey 2019; Mogstad et al. 2020) have shown that the 1.6 rank gain could potentially be an upward-biased estimate of the true impact on upward mobility because of sampling error in the Opportunity Atlas estimates. In particular, the tracts that have the highest *estimated* rates of upward mobility in the Opportunity Atlas may not in fact have the highest *true* levels of upward mobility because of noise in the estimates. Moreover, tracts that got a positive noise draw are more likely to be defined as "high opportunity." We address these concerns in three ways. First, we construct optimal forecasts of upward mobility by applying the linear shrinkage procedure with covariates outlined in Appendix A to the Opportunity Atlas estimates. Under the assumption that upward mobility across tracts is normally distributed (conditional on the covariates), the forecasts yield an unbiased estimate of the gain from the intervention (Andrews, Kitagawa, and McCloskey 2019). The treatment effect on the forecasts of upward mobility is 1.6 percentiles, the same as what we obtain with the raw estimates.[30] Second, we show that tracts classified as high-opportunity based on data for the 1978-83 birth cohorts have significantly higher levels of upward mobility (with $p < 0.001$) using data for the 1984-89 birth cohorts. Third, the Opportunity Atlas estimates are highly predictive of the actual earnings outcomes of children randomly induced to move to different neighborhoods in the Moving to Opportunity experiment (Chetty et al. 2018, Figure X). Together, these results confirm that the tracts to which families in the treatment group moved are not merely classified as "high opportunity" due to noise and do in fact have higher latent levels of upward mobility, as one would expect given that the reliability of the Opportunity Atlas tract-level estimates is 0.91 (Chetty et al. 2018).

We translate the treatment effect estimate of 1.6 percentiles on household income ranks into

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28. We use the final, publicly available version of the Opportunity Atlas when constructing these predictions rather than the preliminary measures that were used to define "high opportunity" areas to maximize precision. However, results are similar if we use the preliminary measures because they are highly correlated with the final measures (Appendix Figure 2).

29. For families who did not lease up using their vouchers, we use upward mobility in their origin Census tract as the outcome. A survey of these households suggests that most stay in their origin tract and those that do move on average move to areas with lower upward mobility.

30. The forecasts happen not to change the estimates significantly because some of the tracts to which families in the treatment group moved have lower estimates in the raw Opportunity Atlas data than one would predict based on covariates; as a result, even though shrinkage reduces the predicted gains from moving to most high-opportunity tracts, it ends up not affecting the overall mean significantly.

an estimated causal impact on income for a given child whose family is induced to move to an opportunity area by CMTO by making two adjustments. First, not all of the observational variation in upward mobility across areas is driven by the causal effects of place; some of it reflects selection that would not be captured by a child who moves. Chetty et al. (2018) estimate that 62% of the variation in upward mobility is due to causal effects, i.e. moving at birth to an area with 1 percentile higher predicted outcomes would increase a given child's rank in adulthood by 0.62 percentiles.[31] Second, the treatment effect in Figure 4d understates the gains a given child would obtain by moving from a low to high-opportunity area because only 37.9% of families were induced to move to high-opportunity neighborhoods by the CMTO treatment.

Adjusting for these two factors, we estimate that the causal effect of the moves induced by the CMTO treatment for a child who moves at birth is $1.6 \times \frac{0.62}{37.9} \approx 2.6$ percentiles. This corresponds to an increase in annual household income of approximately \$3,000 when children are in their mid-thirties, which is approximately 8.4% of the mean income of children growing up in families at the 25th percentile of the national income distribution in low-opportunity areas in Seattle and King County. Assuming that individuals obtain a 8.4% income gain throughout their lives and an annual income growth rate of 1% per year, we project an undiscounted total lifetime income gain of \$214,000. This is equivalent to \$85,000 in present value at birth with a 2% discount rate.[32]

As another benchmark, note that children growing up in 75th percentile families in Seattle end up 13.6 percentiles higher in the income distribution as adults than those growing up in 25th percentile families in Seattle. Moving to a high-opportunity area reduces this 13.6 percentile gap in outcomes by $\frac{2.6}{13.6} = 19.1\%$. That is, moving from the average low-opportunity to high-opportunity area within Seattle reduces the gap in income between children from low- and high-income families by about 20%.

If the children who move to high-opportunity areas as a result of the CMTO treatment go on to earn more as predicted, the incremental income tax revenue from the higher earnings would offset the up-front service cost of the program (excluding the downstream costs of higher voucher payments).[33] We estimate that the treatment effect of the program on the present value of income

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31. Chetty et al. (2018) obtain a very similar estimate when focusing on the subset of families induced to move to low-poverty areas by receiving a housing voucher in the Moving to Opportunity experiment, supporting the application of this 62% figure in our study population.

32. See Appendix Table 5 for step-by-step details on these calculations. The corresponding estimates for individual earnings (excluding spousal income) are a 2.1 percentile gain, translating to approximately \$1,800 (7%) per year in a lifetime earnings gain of \$133,000.

33. We emphasize that the service cost of the program does not incorporate the costs of higher voucher payments that are generated by families in the treatment group moving to more expensive neighborhoods and the fact that voucher payments are indexed to local rents in SHA and KCHA (see Section VII below). While these higher voucher

tax revenue for children who move at birth is \$6,000 (discounted at 2%), which is larger than the average program service cost of \$2,660.

In Figure 6, we analyze the distribution of treatment effects on upward mobility by plotting the probability density function of upward mobility for families in the treatment group vs. the control group. Consistent with the results in Figure 4d, the distributions for the treatment group are shifted significantly to the right relative to that for the control group. Families who moved to opportunity did not simply gravitate to lower-opportunity areas within the set of neighborhoods designated as "high opportunity." In particular, some treatment group families moved to the highest-upward-mobility neighborhoods in the county – areas where no one would have moved absent the services (as shown by the near-zero density in the control group in the upper right tail).[34]

V.C Subgroup Heterogeneity

The effectiveness of programs that seek to reduce barriers to moving could potentially vary significantly across subgroups that face different types of barriers (e.g., racial/ethnic minorities who may face discrimination). In Figure 7, we evaluate whether this is a concern by analyzing the heterogeneity in the CMTO treatment effect on the rate of moves to high-opportunity areas across subgroups.

Panel A of Figure 7 replicates Figure 4a separately for non-Hispanic Black head-of-households, non-Hispanic whites, and all other racial and ethnic groups. The CMTO treatment generated large increases in moves to higher opportunity areas of at least 30 percentage points across all of these groups.[35] The significant gains among black families show that the CMTO treatment has substantial effects even in the presence of any racial discrimination that may exist in the housing market (Kain and Quigley 1975). Conversely, the large treatment effects among white families show that the low rate of opportunity moves among voucher holders is not due solely to racial discrimination.

Panel B of Figure 7 splits the sample into families with household incomes below vs. above

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payment costs are an additional expense borne by the government, they may vary across jurisdictions and could potentially be reduced by limiting the extent to which payment standards are increased in more expensive areas – an important direction for future research on optimizing the cost effectiveness of CMTO-type interventions.

34. In light of this result, an interesting question for future work is whether one might be able to further amplify the impacts of the CMTO intervention on upward mobility by setting the threshold used to define "high-opportunity" areas at a higher level, thereby encouraging more families to move to the highest-opportunity neighborhoods.

35. These changes in neighborhood choice are likely to improve long-term outcomes for all of these subgroups as well: for instance, Chetty et al. (2018) show that black children who move to areas with higher levels of upward mobility on average have higher earnings in adulthood, even if the neighborhoods to which they move have relatively few black families.

$19,000 per year (the median in the CMTO experimental sample). We find substantial treatment effects in both of these groups, demonstrating that the program yields benefits even for the most disadvantaged households.

In Table 2, we estimate analogous treatment effects for several other subgroups of the population by cutting the data on various baseline characteristics. In every one of the 37 subgroups considered in the table, we find a highly statistically significant treatment effect on the rate of opportunity moves of at least 30 percentage points. These groups include immigrants vs. U.S. natives, those with or without English as their primary language, and families with more or less optimistic views at baseline of moving to an opportunity area. There are no significant changes in overall lease-up rates in any of the subgroups (Appendix Table 6), consistent with the patterns in Figure 4b for the full sample.

In sum, the CMTO intervention generates highly robust increases in moves to opportunity across subgroups of the population.

V.D   Trade-offs on Other Dimensions of Unit Quality

Do the families induced to move to higher-opportunity areas by the CMTO program make sacrifices on other dimensions of neighborhood or housing quality? To answer this question, we estimate treatment effects on a variety of unit- and neighborhood-level characteristics.

Figure 8a shows that the distance moved (and thereby distance back to one's prior neighborhood) is similar for treatment and control families who leased up. Figure 8b shows that the treatment also did not induce families to move to smaller housing units; if anything, families in the treatment group lease slightly larger units than those in the control group (though the difference is not statistically significant). Housing units rented by treatment group families are also quite similar to those of the control group in terms of age, household appliances, and access to air conditioning (Appendix Table 7, Panel B).

Treatment group families move to neighborhoods whose characteristics are generally associated with higher neighborhood quality – lower poverty rates, more college graduates, more two-parent families, and higher scores on standard Kirwan indices of opportunity (Appendix Table 7, Panel A). This is because treatment group families who moved to high-opportunity areas ended up in neighborhoods that are fairly representative of high-opportunity areas in terms of observable characteristics (Appendix Table 8). Because high-opportunity areas tend to have lower poverty rates, more two-parent families, etc. (Chetty et al. 2018), the treatment produces gains on these dimen-

sions.

In short, the moves to opportunity induced by the CMTO treatment did not require families to make sacrifices in terms of observable neighborhood amenities or housing quality. One reason this might be the case is that Seattle and King County offer higher payments for more expensive neighborhoods, allowing families to access more expensive units in high-opportunity areas. Indeed, Panel C of Figure 8 shows that treatment group families move to units with monthly rents that are $188 higher on average than families in the control group. Given the structure of payment standards, this marginal cost is entirely borne by the housing authority rather than the families themselves: the treatment had no significant impact on families' out-of-pocket rent payments (Appendix Table 7). Understanding the trade-offs that would be induced by CMTO-type programs in a setting without tiered payment structures is an interesting direction for further work.

V.E   Persistence and Neighborhood Satisfaction

Are the families who moved to high-opportunity areas as a result of the CMTO treatment satisfied with their new neighborhoods and likely to stay there after moving? A key concern in any mobility program is that moves to higher-opportunity areas may be short-lived, especially since many families have not experienced these areas before and could revise their preferences after living there. In this section, we examine these issues by analyzing whether families choose to stay in high-opportunity areas after moving and using survey data to assess neighborhood satisfaction.

We begin by evaluating whether families who moved to high-opportunity neighborhoods stay there when their lease comes up for renewal. We have data on where families live up to February 6, 2020. Since most leases last for one year, we focus on families who leased up a unit before January 7, 2019, which gives them at least 1 year and 1 month to make second moves within our sample window. Since families who lease up very quickly after receiving a voucher are a selected subsample, we further restrict the sample to families who received vouchers before September 1, 2018. Among the families who received their vouchers before September 1, 2018 and eventually leased up, around 90% leased a unit before January 7, 2019, limiting the scope for selection bias.[36]

Figure 9a plots the fraction of families within this sample who initially leased a unit in a

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36. We can fully eliminate selection bias by comparing the fraction of families who live in high-opportunity areas without limiting the sample to those who leased up before January 7, 2019, as in Figure 9. In Appendix Figure 5, we see that CMTO increased the fraction of families living in high-opportunity areas by about 40 percentage points both in February 2019 and February 2020, demonstrating that the intervention leads to sustained increases in exposure to high-opportunity neighborhoods. The drawback of this estimate is that it does not isolate the rate of persistence in new neighborhoods among families who moved because the change between February 2019 and 2020 is partly driven by a small fraction (10%) of new lease-ups that occurred between those two points.

high-opportunity area alongside the fraction who live in a high-opportunity area as of February 6, 2020. The treatment effect of CMTO is highly persistent: families in the treatment group are 41 percentage points more likely to be living in a high-opportunity area after at least one year and one month on lease, as compared with 45 pp when they first leased-up.[37] This is because more than 80% of families in both the control and treatment group renew their lease in the unit they first leased (Figure 9b). These findings suggest that at least in the short-run – after one year of experience in their new neighborhoods – families induced to move to opportunity by the CMTO intervention do not exhibit a strong desire to move to the lower-opportunity neighborhoods they would otherwise have chosen, consistent with Darrah and DeLuca (2014). One factor that may have contributed to these high rates of persistence is that the families who moved to high-opportunity areas in CMTO chose such neighborhoods without being required to do so to use their vouchers (and hence are a selected subsample who exhibit a preference for such areas). In contrast, the families in the Moving to Opportunity experimental group were required to move to low-poverty areas to use their vouchers.

To assess persistence over longer horizons and gauge the preferences of infra-marginal households (i.e., those who are not close to the margin of moving again), we supplement the short-term persistence measures with survey data on neighborhood satisfaction. As part of the qualitative data collection, we surveyed 130 randomly chosen families who had leased up units using their vouchers about their satisfaction with their new neighborhoods. On average, these surveys were conducted 6 months after families had moved. As discussed in Section IV.B, families who responded to these surveys are representative of the full sample on observable characteristics and there is no evidence of selective attrition by treatment status. We therefore believe that inferences drawn from this smaller subgroup of respondents are likely to yield unbiased estimates of treatment effects in our broader experimental sample.

Families in the treatment group express much greater satisfaction with their new neighborhoods than control group families. At the end of their qualitative interviews, families were asked, "Which of the following statements best describes how satisfied you are with your current neighborhood?," with five potential answers ranging from "very satisfied" to "very dissatisfied." Figure 10a shows that the treatment increased the share of families who reported being "very satisfied" with their new neighborhoods by 18.7 percentage points (s.e. = 10.1, p = 0.066), from 45.5% in the control group

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37. Households in the sample (i.e., who were issued a voucher before September 1, 2018 and leased-up before January 7, 2019), had been in their new units for 1 year and 4 months on average by Feb 6, 2020.

to 64.2% in the treatment group (see Appendix Figure 6 for the full distribution of responses).

Families were also asked, "Which of the following statements best describes how you feel about staying in your current neighborhood?," with five potential answers ranging from "very sure I want to stay" to "very sure I want to move to a different neighborhood." Treatment group families are 17.4 percentage points (s.e. = 9.8, p = 0.076) more likely to say they are "very sure" about wanting to stay in their new neighborhood (Figure 10b). In light of prior evidence that these subjective assessments of satisfaction and persistence are highly predictive of subsequent move rates (Clark and Ledwith 2006; Basolo and Yerena 2017), these findings suggest that treatment group families will be more likely to stay in their new neighborhoods than typical housing voucher recipients in the long run.

To further explore the mechanism underlying these improvements in neighborhood satisfaction, in Figure 11 we disaggregate the measures of satisfaction (Panel A) and likelihood of staying (Panel B) by whether families moved to high-opportunity areas or not. In both the treatment and control groups, families who moved to high-opportunity areas report much higher levels of satisfaction and likelihoods of staying.[38] These differences emerge only post-move: families in all four groups report similarly low levels of satisfaction (Panel C) and low probabilities of staying (Panel D) in their neighborhoods at the point of the baseline survey prior to randomization. Although the comparisons in Figure 11 are based on endogenous choices rather than experimental variation, they suggest that the key determinant of satisfaction is the neighborhoods in which families live rather than a direct effect of the CMTO services themselves. In particular, the treatment effect on the the fraction of families who report being very satisfied (18.7 %) is similar to what one would predict based on the difference in satisfaction between families who moved to high vs. low opportunity areas within the control group multiplied by the treatment effect on the fraction who move to high-opportunity areas (59.7 ×43.1 = 25.7).[39]

In sum, the sharp increases in neighborhood satisfaction and high levels of persistence in the new neighborhoods allay the concern that the CMTO treatment may have steered families into

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38. The gains in satisfaction associated with moving to a high-opportunity area are slightly larger in the control group than the treatment group, perhaps reflecting the fact that the few families who moved to high-opportunity areas in the control group strongly preferred them to begin with, whereas the CMTO treatment induced families with slightly weaker preferences to move as well.

39. These findings also help address the concern that survey responses may be driven by social desirability bias, whereby families in the treatment group might feel obliged to say positive things about the program and their neighborhoods to the interviewers. To mitigate any such biases, interviewers (a) stressed that they were independent from the PHAs and would not share their responses with the PHAs and (b) sought to develop rapport with families at the beginning of the interviews – starting with an open invitation to "Tell us the story of your life" – before asking CMTO-specific questions.

new neighborhoods that end up being a poor fit after they arrive. Instead, these findings suggest that there are significant barriers to mobility that prevent low-income families with vouchers from moving to higher-opportunity areas that they actually prefer ex-post.

V.F   Implications for Models of Neighborhood Choice

In this section, we formalize what we can learn from the experimental results about the role of preferences vs. barriers in standard models of neighborhood choice.

We begin by considering a frictionless model of the housing market in which all households live in the neighborhoods that maximize their utility. In this setting, our treatment effect estimates yield tight bounds on families' preferences for low vs. high-opportunity areas. We illustrate the intuition for these bounds in Figure 12 and present algebraic derivations using a canonical model of neighborhood choice with heterogeneous preferences in Appendix D. On the x-axis of Figure 12, we plot a family's net willingness to pay (WTP) for a *non-opportunity* neighborhood. Formally, the WTP is the indirect utility of moving to a non-opportunity neighborhood minus the indirect utility of moving to an opportunity neighborhood, taking into account rental costs as well as the baseline subsidies provided by the HCV program. Larger values on the x-axis correspond to stronger preferences for non-opportunity neighborhoods (e.g., because of other amenities or proximity to family).

What is the distribution of WTP to move to a non-opportunity area in the population of CMTO participants? Given that 17.6% of the control group that leased up moved to an opportunity neighborhood (Figure 4c), a frictionless model inferring preferences from choices would imply that only 17.6% of families leasing up with vouchers prefer living in opportunity neighborhoods. This value is depicted by the open circle on the figure, where the y-axis shows the fraction of families with WTP below a given level x (i.e., the CDF of the WTP distribution).

To further characterize the distribution of WTP, note that in a purely frictionless model, the services provided by CMTO could be purchased in the market at marginal cost, and hence would be valued at most at $2,660 – the marginal cost of the CMTO program (see discussion in Appendix D). Hence, the fact that 60.7% of families who lease up in the treatment group move to high-opportunity areas would imply that 60.7% of households prefer living in opportunity neighborhoods when provided the equivalent of a $2,660 subsidy to move to such areas. Put differently, 60.7% of families have a WTP for low-opportunity areas below $2,660 – i.e., most families do not have a strong distaste for high-opportunity areas. This value is depicted by the solid circle in Figure 12.

Connecting these two points, as shown by the solid portion of CDF plotted in Figure 12, a frictionless model would imply that 43.1 % of families who apply for housing vouchers have a WTP for low-opportunity areas between $0 and $2,660. That is, the only way to rationalize our findings in a model where families live in their preferred neighborhoods is that a large group of families happen to be close to indifferent between high- and low-opportunity areas and thus are swayed by the relatively low-cost CMTO intervention.

This explanation, however, runs counter to two other experimental results documented above. First, we find nearly uniform treatment effects across various subgroups of the population (Table 2). It is unlikely that all of these subgroups would happen to have a distribution of WTP that places a large mass of families close to indifference across neighborhoods. Second, families who are induced to move to opportunity areas experience large increases in neighborhood satisfaction (Figure 10a), contradicting the view that these families are close to indifference across neighborhoods.

Our experimental findings thus challenge traditional economic models of residential sorting and spatial equilibrium in which households are indifferent between locations given costs and amenities (e.g., Rosen 1979; Roback 1982). A more plausible explanation for these findings is that some families actually have a high WTP to move to opportunity but are prevented from doing so by barriers they cannot easily address themselves through market services. More broadly, our findings suggest that models in which preferences are the primary driver of neighborhood choice may not provide an accurate account of what drives residential segregation, especially among low-income families, consistent with evidence from other settings such as the Gautreaux Project in Chicago (Charles 2003; DeLuca and Rosenbaum 2003; Desmond and Shollenberger 2015; DeLuca, Wood, and Rosenblatt 2019).

Although we focus on tenant preferences in our model, the same logic would hold in a generalized model that permits heterogeneity in landlord preferences over tenants. In particular, any landlord preference to rent to non-voucher holders in high-opportunity areas must be small enough to be overcome by the CMTO treatment for 43% of families. Hence, strong preferences among landlords over tenants' backgrounds are also unlikely to explain the segregation of low-income families into lower-opportunity areas, consistent with Garboden et al. (2018).

One reduced-form way to model barriers to neighborhood choice is as monetary search costs that families pay to find housing, as is common in the modern urban economics literature (e.g., Wheaton 1990; Bayer, Ferreira, and McMillan 2007; Kennan and Walker 2011; Galiani, Murphy, and Pantano 2015). The sharp increases in neighborhood satisfaction from moving to opportunity

suggest that the search costs needed to rationalize our full set of experimental results must be quite large, persistent, neighborhood-specific, and independent of distance moved.[40] It is critical to unpack what these search costs are and develop models that specify their structure explicitly in order to understand how to reduce these costs and help families find housing in their preferred neighborhoods. To this end, the rest of the paper focuses on characterizing the barriers families face and the mechanisms through which CMTO reduced those barriers.

VI   Qualitative Evidence on Mechanisms

In this section, we explore the mechanisms underlying the treatment effects documented above by presenting qualitative evidence from interviews with 161 families conducted between December 12th, 2018 and February 26th, 2020. These 161 families were randomly sampled from the study population, stratified by PHA, treatment status, and voucher status (leased-up or still searching). We oversampled families in the treatment group to maximize our power to learn about treatment mechanisms. We successfully completed interviews with approximately 80% of the sample we randomly selected for inclusion in the qualitative study (Appendix Table 2). As discussed in Section IV.B, families who participated in these interviews are representative of the full study population on observable characteristics and response rates were nearly identical across the treatment and control groups. We then systematically coded the nearly 8,000 pages of transcripts from these interviews to measure the prevalence of various themes and identify recurring patterns. Details on the methods used to collect and code the data are given in Appendix C.

We interviewed participants using an in-depth narrative approach, building on prior qualitative research of mobility programs (Darrah and DeLuca 2014; DeLuca, Clampet-Lundquist, and Edin 2016). We asked families about their lives broadly, such as their residential history, family dynamics, and children's schooling. We also elicited information about the barriers that families faced in moving to high-opportunity areas and the components of CMTO that were most useful in addressing those barriers.[41] This qualitative design is fruitful because it allows us to both identify the prevalence of mechanisms we had postulated ex-ante and uncover new mechanisms that we had not anticipated. This is especially helpful because supplementary analyses (reported in Section

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40. One prominent example of such a cost is racial discrimination by landlords, which has been incorporated into models of housing search since at least Kain and Quigley (1975). While racial discrimination may be an important barrier, it is worth noting that we find equally large treatment effects of the CMTO intervention for white families, suggesting that it is not the sole barrier at play. In addition, our finding that the treatment did not affect distance moved (Figure 8a) challenges standard parameterizations of search costs, which simply scale with distance moved.

41. We also conducted interviews with control group members to understand why the absence of CMTO supports makes opportunity moves so difficult.

VII below) suggest that some of the primary mechanisms we expected would matter ex-ante – namely financial assistance and provision of information about high-opportunity areas – do not in fact appear to explain CMTO's impacts by themselves. Our qualitative results suggest that such financial and informational resources are only effective when delivered through supportive meetings with CMTO staff and deployed strategically by the staff at critical points of the search process.

We structure our qualitative analysis in three parts. We begin with a descriptive characterization of the families in the sample that sheds light on the challenges they face in searching for housing. We then describe five key mechanisms that emerge in treatment group families' descriptions of how CMTO helped them overcome these challenges. Finally, we show how the *combination* of these mechanisms and the ability to customize the treatment to each family's particular needs was central to the program's success, drawing on both the interviews and quantitative evidence from our case management system on service utilization.

VI.A   Who are the Families Applying for Housing Vouchers?

Our conversations with families revealed several deeper dimensions of economic disadvantage and barriers to housing search beyond the measures in the baseline survey data summarized in Table 1. A substantial share of the families (45%) report struggling with a major health problem, including children with significant physical, mental or emotional needs. 29% had experienced domestic violence.[42] Many parents in the qualitative study describe their own childhoods as having been traumatic and attribute current struggles with depression, anxiety, phobias, and anger to histories of family "chaos," as one mother described it.

Caregiving responsibilities and own health issues make maintaining consistent employment difficult for a large share of the household heads. Perhaps as a result of these factors, the families have histories of housing insecurity and instability. Nearly one-fifth (19%) of the families we interviewed had been evicted, and nearly half (49%) had been homeless in the past. The majority of household heads (78%) had been previously "doubled-up," living in the homes of family members or friends.

When we asked families to tell us about their residential histories, their accounts often included descriptions of repeated denials when applying for rental housing, largely arising from credit problems. For example, one of the participants we met, Sandra, the mother of a thirteen-year old boy with significant health problems, had not received her voucher yet at the point of our conversation. Sandra told us she felt despondent about ever find housing in Seattle because of her poor credit

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42. These rates are likely lower-bound estimates, since they were voluntarily shared with interviewers. Had we asked directly about domestic violence or struggles with mental health, these numbers would likely be higher.

history. She was frustrated and said, "I wish they'd do a *criminal* background check instead of a *credit* [check]—I have no crimes."[43]

Although they were desperate to secure housing, many families began the CMTO program anxious about their prospects for finding it in the tight Seattle area housing market. The CMTO parents were generally interested in moves to high-opportunity areas and believed such moves would benefit both their children and themselves. However, they were pessimistic about the prospect of landlords in such areas being willing to rent to them.

Overall, the interviews paint a picture of families that have extremely limited time and resources to devote to housing search. These findings are consistent with significant "scarcity" in mental bandwidth in the terminology of Mullainathan and Shafir (2013), amplifying the scope for small frictions and barriers to affect families' behavior.

VI.B   Five Mechanisms Underlying the CMTO Treatment Effects

Overall, treatment group families who moved to high-opportunity areas reported very positive experiences with the CMTO program. 72% reported largely positive experiences, 25% reported mixed or moderately positive experiences, and only 1% (one case) was largely negative in their description of the CMTO process.

We identified the specific mechanisms through which CMTO helped families move to high-opportunity areas by first reading entire interview transcripts and observing which mechanisms emerged as most salient from families' accounts of their experiences with CMTO. We then coded all transcripts for these mechanisms and then recorded the frequency with which families mentioned various themes. Families discussed five broad mechanisms: (1) emotional support from the program staff that increased families' confidence about their ability to find housing; (2) increased excitement about moving to high-opportunity neighborhoods; (3) a streamlined search process that reduced demands on families' time and cognitive bandwidth; (4) brokering between the program staff and landlords; and (5) strategically targeted short-term financial assistance.[44] The rest of this section illustrates these five mechanisms by presenting examples from specific interviews.

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43. This and other quotes included below were selected because they are representative of the modal experience reported by treatment group families who leased up in opportunity areas with the program. To protect families' identities, all names used below are pseudonyms chosen by respondents.

44. Some of these mechanisms were anticipated in previous work identifying program components that led to successful lease-ups in opportunity areas for the families in the Baltimore Housing Mobility Program (DeLuca and Rosenblatt 2017).

Mechanism 1: Emotional Support

To learn about families' experiences with CMTO, we asked an open-ended question in our interviews – "tell me about CMTO" – before probing about any of the program specific details. Many families responded by describing how *emotionally* supported they felt by the program staff, how *confident* the program had made them feel, and how *relieved* they were when they began to realize what kind of support they were going to receive. 61% of families who leased up in opportunity areas reported that they felt support from CMTO staff.

Families frequently used words like "blessing," "relief," and "miracle" to describe the CMTO program. One mother even referred to a CMTO search assistance staff member as an "angel." Katie, a 23-year-old mother living in North Seattle, told us that CMTO helped her "get a voice," and feel more confident dealing with property managers and negotiating her needs. She said, "I kind of got to start speaking up and not being so scared... you can't lose your Section 8 for speaking out." Dee, a mother of five, explained that without CMTO she would not have had "the courage to even apply for this house" she was living in when we met her, given her credit history.

Jackie, a former therapist with a nine-year-old son, told us in powerful terms how she felt when she realized what the CMTO program would provide:

> "a light bulb went on...it was this whole flood of relief...it was just the supportive nature of having lots of conversations with [CMTO staff] about, that they could call the landlords, that they - just about all the different programs. And, you know, helping pay the deposit was immense. That saved me, because I don't know how I would have done that. Yeah, just, you know, personally, mentally, emotionally, and financially, in every way, they were supportive... they just sort of swooped in."

Many families noted that the CMTO staff members' consistent communication and support were critical to keeping them motivated throughout the search process. Mona, a mother of two who moved to the Bellevue area, said "[the search assistance staff member] was on top of everything on me. If it wasn't for her, I honestly think I would have lost my Section 8 because nobody was willing to give us an opportunity." Tina, who moved to North Seattle with her sons, excitedly told us, "wow this program, like they're with you at all times, they help you they're there to guide you."

These accounts differed from what we heard from control group members, like Arya, who wished she had more support when looking for housing for herself and her nine-year-old daughter. Arya described having a difficult time during a recent visit to an apartment leasing office, "could I get somebody to meet me there that might just sit there with me to, you know, provide that – I don't know, like, to explain the paperwork to me more or to be a second ear also. Because yeah, sometimes, I just – I have communication issues like understanding the person and I feel rushed

because I can't get – I don't have the time to just get it out. So, I wanted somebody to come with me and [the PHA] emailed me back that they don't provide that service."

Mechanism 2: Increased Motivation to Move to Opportunity

In addition to the support they felt from the CMTO staff, many families also reported that they became more motivated to participate in the program because of the possibility of moving to a high-opportunity area. They recalled learning about the benefits for their children's long-term success during the initial study intake process and throughout their meetings with CMTO search assistance staff. Many reported feeling "excited" by the prospect of living somewhere that, as Hiba, a mother of three, told us, "there is research they've shown… [there] are more opportunities, there are more graduations from school… That is what we are looking for." Melinda, a mother with a two-year old son, was clear that she was "tired of living around chaos," and became quite emotional when she heard that the program was about more than just providing housing assistance. She explained, "She [the CMTO staff member] made me cry when she kind of explained to me what the program does, like it's not just we pay your rent … it's for to make sure that not only you are in a good area but your kid can grow up in a good area and be successful it's like it made me so happy to think that my son is going to be in a area that can just help him be a good part of society." Overall, 78% of the treatment group families who moved to high-opportunity areas referenced their knowledge of research showing that moves to these areas would benefit their children. Nearly one-third (31%) of these families reported that their motivation to move was specifically driven by a desire to live in a higher-opportunity area.

Several families reported that the CMTO staff pitched the program more as a question of what families want for themselves, and what their vision for the future is, rather than a set of rules or requirements. This framing made some families feel like they were treated with care and respect, and that they were part of the process—neither forced into it nor isolated from it, in contrast to some of their experiences with other social service agencies. During our ethnographic observations of CMTO meetings, we watched as families were provided with a considerable amount of information and maps detailing all of the resources and amenities available in high-opportunity neighborhoods. Then the conversation between parents and the search assistance staff became an interactive and customized discussion of how those resources could fit into their bigger plan for themselves and their children. Dee told us, "[the CMTO staff member] broke down the neighborhoods in ways that I never would have looked at." Given how unpredictable housing situations had been for many

CMTO families, this was the first time some of them had the bandwidth and guidance to think these things through (see DeLuca, Wood, and Rosenblatt (2019) on reactive moves). Ashley, who was homeless before she and her daughter moved with CMTO, explained:

> "It was good because it gave you a breakdown of what you needed to do, questions you need to ask, things you need to think about like school district, grocery stores, public transportation...after that, I'm like, "Well, these are things that are really important to me." And you didn't think about – you don't think about how something so simple is so important...So, now, when I came into this [move], I knew what I wanted. I wanted something close for all these things and something for my daughter."

While many families spoke of a greater motivation to move to high-opportunity areas – perhaps starting to realize that this was a feasible, attainable goal – remarkably few ($<3\%$) framed their CMTO experience in terms of simply receiving more information about the existence of such areas. Indeed, many families pointed out that they were already well aware that some neighborhoods offered much better opportunities for their kids. Sami, a mother of four school-aged children, told us, "I always like think to move like Bellevue or I always heard like that I have friends here for they -- they just move for their kids to school, I always heard like [Bellevue] school is better than Seattle area, ...so I always wish to move here if I can afford it, so that's when I get the voucher and when CMTO told me that you have to do that [to get the additional assistance], that was my wish I was like, yeah." Overall, we find little evidence in the qualitative interviews that the provision of information – a mechanism that has received increasing attention in economics in recent years – is itself a central driver of changes in the neighborhoods where CMTO families ended up moving.

Mechanism 3: Streamlining the Search Process

Parents who participated in CMTO were juggling a number of things alongside their housing searches—including child care, multiple jobs, the fallout from domestic violence, and anxiety about becoming homeless. The many moving parts of the search process—from online searches to the landlord calls, apartment visits, security deposit paperwork, background checks, applications, inspections, and voucher payment paperwork—were often overwhelming for parents. It also took precious time away from their children. As Lisa, who moved with her children to the Lake City area of Seattle, said, "it was like me staring at my phone [to do online housing searches] like while he's playing around and the less I have...to do that takes away from like me focusing on him or the other things that I need to do is the better."

The CMTO staff locators were able to reduce this stress and streamline the search process by giving families clear guidance on what to do. 73% of families who moved to opportunity areas

mention that their housing search and lease-up processes were made simpler, quicker and less overwhelming by the assistance they received from CMTO staff. Some families also referred to a "plan" that they worked on with the CMTO search assistance staff. Others mentioned doing their "homework" to search for places, practice their landlord phone call script, and write down their attempts to find housing in their "search log."

The program also reduced the tax of fruitless and demoralizing housing searches by directly providing listings of rental units that were owned by landlords and property management companies with whom the CMTO staff had built relationships. The CMTO staff built trust with property owners and managers and increased the information these housing providers have about families, thus reducing the influence of "Section 8" stereotypes. Melinda explained how the list of referrals she received from her housing locator made it easier to find the place she moved into:

> "She gave me a list of apartments that CMTO worked with and I just based my search off of that list, so, cuz I was nervous about my credit and I just didn't wanna go through a whole bunch of denials if, you know, they're familiar with this program, then it'll be easier for me to get in...I don't think I would've tried out here honestly without them giving me like the areas that they feel like are more opportunities."

Mechanism 4: Landlord Brokering

The CMTO staff played a key role in facilitating relationships between prospective tenants and landlords, both in preparing the tenants before they met landlords and in participating in conversations with landlords themselves. 61% of the families interviewed reported that CMTO staff helped negotiate directly with landlords on their behalf during some part of the process.

One key element of housing search preparation was the creation of a "rental resume," a document that families could use to present themselves to landlords. The essays helped families explain the circumstances surrounding barriers to housing, like poor credit histories, evictions or unemployment. Some families felt empowered by creating their rental resumes to help move beyond past barriers and achieve their hoped-for future through opportunity moves. The resumes also allowed the housing search assistance staff to better describe families in their conversations with prospective landlords.

Nicole, who moved with her 5-year-old son, described in detail how the rental resume seemed to make a big difference to the leasing company she ended up working with, despite her spotty credit history:

> "Some landlords, you know, your credit could get denied like here like mine did and they could like you based on that [rental resume] and then, [ask] you [for] a higher

deposit and that's what happened here. . . .because I had that credit resume explaining the four derogatory marks on my credit, how they got there, how long they've been there, what I'm doing to dispute them, how I'm getting them off if I'm on a payment plan like. . . And because of that, staff was just like, "Well, I mean, you seem smart, you seem like you're prepared, these things on your credit don't seem like a big deal..." And sure enough, she was like, "Just give her a chance, just higher deposit." So, that, it helped."

Many families also mentioned how valuable it was to have the housing search assistance staff directly speak with landlords on the CMTO participants' behalf. The staff lent families additional credibility during difficult conversations or when landlords seem on the edge of not accepting families. Lakeisha, a house cleaner who moved with her 9-year-old daughter, noted that having the CMTO housing search assistance staff represent her when talking with landlords "felt like it's a reference." Dee's CMTO staff person helped her move into a unit with a landlord who had never rented to a voucher holder before. She recounted the sales pitch the CMTO staff used to explain how the program worked and ended up benefiting both the landlord and the family:

"She did the inspection, she did a lot of talking to the landlord and getting them to understand the program helping him figure out how to get started with the program or Section 8 and all, that was her. She worked with us and worked with the landlord. . . and did very good with helping a first time ever landlord, this is his first time even hearing about Section 8. . . .an opportunity for him to help us in a sideline kind of way, he doesn't really have to do anything except for say yes and we're glad that we can help with this people move into this neighborhood to better resources and stuff for their kids, that was his contribution to my kids' future."

Mechanism 5: Short-Term Financial Assistance.

Finally, many families remarked that the customized financial assistance they received from CMTO mattered for removing upfront roadblocks. 81% of the families we interviewed mentioned receiving financial assistance as part of the CMTO program. As Booth, a mother of two, said pointedly, "Well, if I had money for a security deposit, I'd [already] be paying rent somewhere." Lou explained how CMTO financial assistance made it easier for him and his wife by covering a number of upfront expenses, "CMTO, they help with the deposit, and you know, moving costs, if you have to bring stuff out of storage and things like that, and Section 8 pays for your first and last month rent. . . . You can move in without any hassle, so it really makes, makes it a lot easier to just focus on finding a place."

Importantly, the interviews suggest that it is *not* just providing uniform lump-sum short-term financial assistance – as one would do in a more standardized program – that makes the program effective. Rather, it is the fact that the CMTO staff deploy funds *strategically* at the points at

which it is easiest to lose hope and lose landlords. Such timely financial assistance included paying rental application fees, paying "holding" fees so families don't lose their units while applications are being processed, clearing up old utility bills or paying for new ones, and providing more generous security deposits for families with a past eviction or poor credit record. For example, Stive, a father of two, explained:

> "She [the CMTO search assistance staff member] paid security deposit, I gave her the access to my personal page in the [website] of the home, of this apartment complex. And yes, it was really helpful it was quick, because I was so afraid [of losing the place] when I find it out that I have to make a decision about [taking the apartment], and in the same time I have to pay security deposits and a couple fees [when] I don't have resources."

VI.C   Customization of Services to Families' Needs

The CMTO staff facilitated lease-ups in opportunity areas by combining several of the five approaches discussed above, depending upon each family's specific needs. For example, the emotional and psychological support keeps families connected to the program and optimistic about the end result of the process, which is necessary to motivate their individual housing search efforts, and to get them to the point where the CMTO staff can do the work of connecting with landlords in opportunity areas and completing the lease-up process. The customization of CMTO services – with nonprofit staff being able to flexibly respond to each family's specific situation and needs – appears to be crucial to its success. For instance, Jennifer, a mother of four, noted that the CMTO staff "understood the situation that I was in" and helped her accordingly.

Although many families mentioned several of the five mechanisms described above in their interviews, the intensity with which they used each component of the CMTO program varied greatly. This is borne out by data on service utilization from our case management system, which tracked the duration and nature of each of the contacts between CMTO staff and families. We report statistics on rates of service utilization in Appendix Table 9a. CMTO treatment group families who moved to a high-opportunity area received 7.05 hours of staff time on average, but there was substantial heterogeneity in the utilization of these services, with an interquartile range of about 4 hours to 9 hours. Similarly mean financial assistance for treatment group families leasing up in opportunity areas was $1,983 dollars, with an interquartile range of $958 to $3009. 47% of these families found the unit they moved into through a direct referral to a landlord found by CMTO staff, but 53% identified the units they moved into on their own. Different families also used different subsets of these services: for instance, the correlation between the number of hours

of staff time used and the amount of financial assistance used is 0.19 (Appendix Table 9d).

When we talked to families in the control group, we virtually never heard them discuss receiving this kind of customized assistance, although several mentioned that they wished they had it. Christina, the mother of a six-year-old daughter, described how much she struggled to find housing herself:

> "I went through [local housing provider agency] to see if they could help me find an apartment. Nobody really helps you find an apartment. They just tell you that they like can help you get into it or they tell you that they can help you find one but they don't end up doing that cuz they have a lot of people that they're working with...I found this place [on my own]. I have sent emails back and forth begging to get in here... my application was sitting downstairs approved for like two days while I'm still in cars and outside with my daughter trying to figure it out. I could've been in here at an empty apartment at least with warmth. So, I ended up getting accepted for here. [Local non-profit housing provider] ended up paying for the move in fees and stuff like that which was a blessing but I feel like maybe if they could be more personal with their clients that they're accepting and taking on that I feel like that would help with the homeless situation a lot."

In sum, the CMTO program appears to have had large impacts through a combination of mechanisms that addressed each family's specific challenges, while also negotiating with landlords who might not otherwise rent to a family with a voucher. In light of the findings on scarcity of bandwidth in Section VI.A, one way to summarize the program's mechanism is that it provides emotional and other support that enables families to optimize over neighborhood choice as posited in traditional economic models, thereby allowing them to realize their inherent preference for higher opportunity areas (Harvey et al. 2019; DeLuca and Jang 2020). We believe that the fact that the intervention *cannot* be easily codified into a standardized set of protocols applied to all families underlies its efficacy. The customization of services may also have been beneficial in reducing program costs, as families who did not need certain components of the services (e.g., help with landlords or security deposit assistance) took up less resources from those parts of the program. The general lesson may be that having a highly motivated case worker support each family in overcoming the barriers they face can help them make much more effective use of housing assistance programs (and perhaps other public programs more generally).

VII   Alternative Policies to Increase Moves to Opportunity

In this section, we compare the impacts of the CMTO program to other, more standardized policies that aim to help families move to higher opportunity areas: financial incentives and information provision. We estimate the effects of financial incentives by analyzing the impacts of reforms

implemented in Seattle and King County that increased voucher payment standards in certain high-rent and high-opportunity neighborhoods. We examine the effects of information provision in relation to the treatment effects of CMTO by comparing our experimental results to estimates from other studies that evaluated the effects of information provision using randomized trials.

VII.A   Effects of Financial Incentives

One prominent approach to help families move to higher-opportunity neighborhoods is to offer higher voucher payments in higher-rent or higher-opportunity neighborhoods within a metro area. This is perhaps the most natural approach to reduce monetary search costs in standard economic models of neighborhood choice. It is also a policy, termed Small Area Fair Market Rents, that has gained popularity among housing authorities in recent years.

We estimate the effects of such financial incentives on families' neighborhood choices by analyzing two payment standard reforms. The first, implemented by KCHA in March 2016, increased payment standards in selected neighborhoods that had higher rents and scored higher in Kirwan indices of opportunity. The second, implemented by SHA in April 2018, effectively increased payment standards in exactly the same areas that we designated as "high opportunity" in CMTO. We analyze the impacts of these reforms using difference-in-difference designs, as in Collinson and Ganong (2018).

KCHA Increase in Payment Standards in High-Rent Areas. King County moved from a two-tier to a five-tier payment standard system in March 2016. The reform increased voucher payments in areas with higher rents. Appendix Figure 7 shows the resulting changes in payment standards across King County, which ranged from reductions of $220 per month in a few neighborhoods up to increases of $595 in the most expensive areas.

We use the PHAs' historical administrative data to analyze how the neighborhood location choices of families in KCHA changed around the reform relative to families in SHA. SHA did not enact any changes in its policies at the same time and hence serves as a natural counterfactual.

Figure 13a plots the fraction of families who move to high-opportunity areas (as defined based on our CMTO designation in Section III) by the month in which families were issued their vouchers. To reduce noise, we group months into pairs of two in this and subsequent figures. The fraction of families who leased up in high-opportunity areas fluctuates around 20% both before and after the reform, which is marked by the dashed vertical line. In particular, there is no evidence of an increase in the rate of moves to high-opportunity neighborhoods in KCHA (the "treatment" group

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for the purposes of this quasi-experiment) relative to SHA (the "control" group).

Under the identification assumption that trends in KCHA and SHA would have remained similar absent the reform, we can estimate the causal effect of the KCHA payment standard reform on the rate of moves to high-opportunity areas using a standard difference-in-difference regression specification. We compare the rate of moves to high-opportunity areas in KCHA and SHA in the eight months before vs. after the policy change by running OLS regressions of the form:

$$y_i = \alpha + \beta_1 KCHA_i + \beta_2 Post_i + \beta_3 KCHA_i \times Post_i + \varepsilon_i, \tag{2}$$

where y_i is an indicator for moving to a high-opportunity neighborhood, $KCHA_i$ is an indicator for receiving a voucher from KCHA (rather than SHA), and $Post_i$ is an indicator for being issued a voucher in or after March 2016. We estimate that the causal effect of the reform on the rate of moves to high-opportunity areas is a statistically insignificant $\beta_3 = -3.6\%$ (s.e. $= 5.8$), as shown in Column 1 of Table 4. Controlling for family size and other covariates does not affect this estimate significantly (Column 2).[45] Hence, the KCHA reform increased the rate of opportunity moves by at most 7.7pp at the top of the 95% confidence interval – substantially smaller than the CMTO treatment effect of 37.9%, shown by the dashed line in Figure 13a as a reference. Indeed, only 17.5% of KCHA families with children moved to high-opportunity areas in the eight months after the payment standard increase, far below the 53.0% rate achieved through the CMTO program in King County.

Our analysis of the KCHA reform shows that raising payment standards in more expensive neighborhoods – as is typically done in SAFMR policies – does not necessarily induce families to move to higher-opportunity areas.[46] One interpretation of this result is that financial incentives have smaller impacts on neighborhood choice than the customized services offered through CMTO. An alternative interpretation is that incentivizing families to move to more expensive neighborhoods

45. Analogous DD specifications using median rents as the dependent variable suggest that the SAFMR reform induced families to move to more expensive areas (Columns 3 and 4 of Table 4), consistent with Collinson and Ganong (2018), although the estimates are somewhat imprecise and hence not statistically significant.

46. In contrast with this finding, Collinson and Ganong (2018) find that SAFMRs induced moves to higher-quality neighborhoods in Dallas, where quality is defined as an index of tract-level poverty rate, test scores, unemployment rate, the share of children with single mothers, and the violent crime rate. By contrast, we find that SAFMRs in King County had no impact on either an index of neighborhood quality similar to that used by Collinson and Ganong or the Opportunity Atlas measures of upward mobility. One explanation for the different results is that the correlation between rents and upward mobility is 0.56 in Dallas, significantly higher than the 0.18 correlation in King County. The tighter link between rents and opportunity in Dallas might increase the impacts of SAFMRs on opportunity moves there. That said, Collinson and Ganong kindly replicated their analysis using the Opportunity Atlas measure of upward mobility and found an impact on the mean predicted rank of children with parents at the 25th percentile of 0.86 percentiles. Although this is a significant gain, it is still considerably smaller than the impact of CMTO, supporting the view that financial incentives have much smaller effects than customized mobility services.

does not induce moves to opportunity because rents are not very highly correlated with upward mobility in King County (Figure 1b). To distinguish between these explanations, we now turn to a second quasi-experiment.

SHA Increase in Payment Standards in High-Opportunity Areas. In March 2018, SHA introduced a Family Access Supplement (FAS) that effectively increased payment standards in areas that were designated as "high opportunity" in the CMTO study. If a family moved to an opportunity area and the unit rent exceeded the voucher payment standard by an amount that would cause the household to pay more than 40% of their income, the FAS paid for the unit's rent minus 40% of the family's income (subject to a maximum, which was $400 for 2 bedroom units). For families who moved to an opportunity area, this additional rental support amounted to $144 per month on average.

The FAS was initiated at the same time as a pilot phase of the CMTO intervention prior to the CMTO experiment. It continued throughout the pilot and the experiment, effectively providing families in the control group higher payments to move to high-opportunity areas than they would have received had they gotten their vouchers before March 2018. The FAS was restricted to families with at least one child under 18. We therefore estimate the impact of the FAS by comparing families with children to families without children in SHA.[47]

Figure 13b plots the fraction of families moving to high-opportunity areas before and after the introduction of the FAS (shown by the dashed line) for households with vs. without children. During the CMTO pilot phase (shown in the shaded region), all families with children received CMTO services. The fraction of families moving to high-opportunity areas trended similarly prior to the CMTO pilot and the FAS payment standard reform. During the pilot, the rate of moves to opportunity for those with children spiked up to 80%, while the rate of such moves for the those without children (who were untreated) remained steady. After the pilot, the rate of opportunity moves (based on data for the CMTO control group) fell precipitously for families with children.

Under the identification assumption that the rate of opportunity moves for families with vs. without children would have remained similar after March 2018 in the absence of the FAS, we can infer that the SHA reform caused a small increase in the rate of moves to high-opportunity areas. Using a standard difference-in-differences specification comparing the rate of high-opportunity moves among families with vs. without children in SHA in the six months before March 2018 vs.

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47. We do not use KCHA as a counterfactual here because KCHA itself was implementing its CMTO pilot at the same time that SHA introduced the FAS.

the six months after May 2018 (after the CMTO pilot ended, using only families in the CMTO control), we estimate that the FAS increased the rate of opportunity moves by 13.8 pp (s.e. = 5.1), as shown in Column 5 of Table 4. This is roughly one-third the size of the CMTO treatment effect.

The FAS has a recurring monthly cost of \$144 on average for families who move to high-opportunity areas, which amounts to \$12,100 over 7 years (the average period for which families use their vouchers). This is substantially larger than the cost of CMTO mobility services, which are about \$5,010 per family that moved to a high-opportunity area. We therefore conclude that financial incentives have significantly smaller impacts per dollar of expenditure than customized mobility services even when targeted directly to high-opportunity areas.

Although these findings show that standardized financial incentives by themselves have limited impacts on the fraction of families who move to opportunity, there could potentially be an interaction effect whereby the mobility services in CMTO were more effective because the housing authorities were offering enhanced payment standards that enabled families to move to more expensive, higher-opportunity neighborhoods. While we do not have direct experimental evidence on what the treatment effects of CMTO would be in the absence of such tiered payment standards, we find that 34% of the treatment group families who moved to high-opportunity areas leased up units that they would have been able to afford even in the absence of the enhanced payment standards described above (i.e., in the absence of the FAS supplement in SHA and under the pre-March-2016 two-tier system in KCHA). This finding suggests that CMTO mobility services would have substantial impacts even in the absence of differential payment standards across neighborhoods, though further work is necessary to quantify how effective the program would be in such settings.[48]

VII.B Effects of Information Provision

Another alternative to customized housing search assistance is to provide information in a more standardized manner. Bergman, Chan, and Kapor (2019) randomized the provision of information to families about the quality of schools associated with rental units on GoSection8.com, a housing search platform widely used by voucher holders. They find small positive impacts of this low-cost intervention on the fraction of families who move to areas with better schools, with treatment effects considerably smaller than those induced by CMTO. Families who received the information treatment moved to neighborhoods with schools scoring 0.1 standard deviations (SD) better on

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48. This 34% figure should be interpreted as a lower bound on the fraction of families one would be observe moving to a high-opportunity area with the CMTO treatment in the absence of the higher payment standards since many families would presumably still move to high-opportunity areas, but choose less expensive units than the ones they chose given current policies.

state tests on average. By contrast, the CMTO intervention induced treatment group families to move to neighborhoods with schools scoring 0.5 SDs higher on state tests. Moreover, using data from the Opportunity Atlas, Bergman et al. estimate that the effect of the additional information on predicted household income rank is 16% as large as the CMTO impact on upward mobility shown in Figure 4d.

Schwartz, Mihaly, and Gala (2017) report results from a randomized trial in Chicago in which families receiving housing vouchers were given $500 of financial assistance and light-touch mobility counseling services to move to a high-opportunity area (defined based on a composite index of poverty rates, job access, and other characteristics). The counseling services offered in the Chicago trial were largely informational and "client-led" as opposed to the more intensive counselor-led services offered in CMTO. They find that these treatments had no impact on the rate of high-opportunity moves: less than 12% of families moved to high-opportunity neighborhoods even with these incentives and supports.

Supplementary evidence from our own data further supports the view that standardized information provision is unlikely to be adequate to induce moves to opportunity. The CMTO treatment increased the fraction of families living in high-opportunity Census tracts substantially (48 pp) even among families who lived in high-opportunity areas at baseline (Table 2). Since these families presumably were familiar with these neighborhoods to begin with, this finding weighs against the view that a lack of information is the central reason families do not move to opportunity. Furthermore, 72% of families report that they feel "good" or "very good" about moving to an opportunity neighborhood in the baseline survey, before the CMTO intervention began, again suggesting that they do not lack information about such areas.

Together, the results in this section suggest that the mechanisms through which the CMTO intervention works are not simply the provision of financial incentives or information about high-opportunity areas. These findings are consistent with the qualitative evidence discussed above, and suggest that customized support in the search process and help in engaging landlords are likely to be pivotal elements in the program's success.

VIII   Conclusion

Low-income families tend to live in neighborhoods that offer limited prospects for upward income mobility, amplifying the persistence of poverty across generations. This paper has shown that this pattern of segregation is not driven by deep-rooted preferences among tenants or landlords.

Rather, low-income families live in such areas primarily because of barriers that prevent them from moving to higher-opportunity neighborhoods – barriers that can be overcome through short-term assistance in the housing search process. These findings challenge canonical economic models of neighborhood choice in which residential sorting patterns are determined primarily by families' preferences and call for greater modeling of the underlying structure of search costs. The findings also advance canonical sociological models of neighborhood choice and residential mobility, in which barriers such as discrimination have received greater emphasis (D. S. Massey and N. A. Denton 1993; Yinger 1995; South and Crowder 1997), because they reveal that some of the barriers families face can be overcome through a modest amount of assistance in the housing search process.[49]

More broadly, our findings suggest that the growing economic segregation of American cities (Reardon and Bischoff 2011) is not an inevitable consequence of preferences (either among tenants or landlords), but rather a trend that can be addressed through modest changes in public policies. In particular, redesigning rental assistance programs to provide customized search assistance in addition to existing financial support could reduce segregation and thereby increase upward mobility significantly. Such programs could have little net cost to taxpayers, as the costs of the up-front services could be offset by the increased tax revenue paid by children who earn more when they grow up.

Going forward, it would be useful to replicate the CMTO program implemented in Seattle and King County in other cities to understand whether the program can be scaled nationally with the same level of effectiveness. In parallel, recognizing that not all families can move to opportunity, we also hope to identify place-based investments that can improve outcomes for residents of lower-opportunity areas.

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49. These conclusions are in line with Krysan and Crowder's (2017) discussion of policies to break the cycle of segregation.

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Online Appendix

A   Algorithm for Constructing Opportunity Maps

We defined opportunity areas through a collaborative effort between the researchers and the staff of the Seattle and King County housing authorities. Here, we summarize the process through which we arrived at the final maps shown in Figure 2a.

Constructing Predictions of Upward Mobility by Census Tract. We begin from a preliminary version of the measures of upward mobility later published in the Opportunity Atlas (at the time the experiment began, the final Opportunity Atlas estimates had not yet been released). In particular, using data provided in Chetty et al. (2013), we define upward mobility as the average household income rank in 2015 at age 30-35 for children who grew up in the 1980-1985 birth cohorts. To construct these measures, we focus on children who did not move across Census tracts before age 23 during our sample window and assign these children to the childhood Census tracts in which they grew up. For each tract in Seattle and King County, we then regress children's income ranks on their parents' income ranks. Finally, we construct the predicted value from the OLS regression at the 25th percentile, which we denote by y_t in tract t; y_t represents a raw estimate of upward mobility for children who grow up in tract t.

We then construct a forecast model that incorporates several additional pieces of information to reduce sampling error in the raw estimates of upward mobility.[50] To begin, we regress y_t on a vector of tract characteristics, X_t:

$$y_t = \beta X_t + \epsilon_t$$

where X_t consists of the following variables: poverty rates in 2010; average family income at age 22 for children in the 1986-93 cohorts who grew up in families with incomes at the 25th percentile (i.e., upward mobility measured at an earlier age for slightly later non-overlapping cohorts); average college "quality" (the average earnings of the children who attended the college attended by the child in question) for children in the 1986-91 cohorts who grew up in families with incomes at the 25th percentile; mean 4th grade average math and reading test scores for children who received free or reduced-price lunches averaged from 2015 to 2016; and an indicator for whether or not the tract is within the city of Seattle. We weight the regression by the precision (inverse of variance) of the raw upward mobility estimates, y_t.

Next, we form the predicted values $y_t^x = \hat{\beta} X_t$ for each tract and the residuals $\epsilon_t^x = y_t - y_t^x$. We estimate the signal to noise ratio of the residuals using the estimated standard error of y_t (treating the covariates as known). We use the ratio of estimated signal to total variance, $\hat{\kappa}_t$, in each tract to form a forecast of upward mobility:

$$\hat{y}_t = \hat{\beta} X_t + \hat{\kappa}_t \epsilon_t^x$$

These forecasts are the best linear predictors (mean-squared-error-minimizing) of upward mobility given data on X_t and y_t when constraining the coefficient vector β to be constant across tracts, as discussed in Section V of Chetty and Hendren (2018b). Intuitively, they shrink y_t toward the

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[50].

   This noise-reduction procedure was especially important with the preliminary Opportunity Atlas estimates because we had smaller samples at the time; in the final Opportunity Atlas data, the reliability of the raw tract-level estimates of upward mobility is 0.91 (Chetty et al. 2018, Table IIa), making the forecasting procedure below less important going forward.

predicted value based on the covariates, with the optimal shrinkage rate depending upon the degree of noise in the estimate of y_t.

Defining High-Opportunity Areas. Using our predictions of upward mobility, we define opportunity neighborhoods as the set of tracts whose forecasted upward mobility $\hat{y}_t$ falls in approximately the top 20% of tracts in the city of Seattle (for the Seattle Housing Authority) and the top 40% of tracts in King County excluding Seattle (for the King County Housing Authority). We use different thresholds across the jurisdictions because there are more neighborhoods that have high levels of predicted upward mobility outside the city of Seattle than within the city boundaries. We then consider making adjustments this initial definition to account for three issues: (1) changes in neighborhoods over time, (2) geographic discontinuities, and (3) the existence of tracts that already have large concentrations of voucher holders.

To evaluate neighborhood change, we obtain publicly available school-level test-score data for children in each tract for recent cohorts from the state of Washington. We evaluate trends in both average test scores and test scores for children on free and reduced price lunch. Although some rapidly gentrifying neighborhoods (particularly in central Seattle) experienced rapid growth in mean test scores overall, the average test scores conditional on free and reduced price lunch status changed much less. We therefore conclude that although neighborhood compositions are changing over time, there is little clear evidence that neighborhood effects on upward mobility of low-income children have changed systematically even in rapidly gentrifying areas. We therefore proceed with our original forecasts, $\hat{y}_t$, without making any adjustments to account for neighborhood change.

The algorithmic definition of high-opportunity neighborhoods occasionally produces "holes" where a given tract is classified as low-opportunity while those surrounding it are classified as high-opportunity (or vice versa). We work with the housing authorities to fill these holes and create geographic continuity using qualitative assessments of how people perceived "neighborhoods" on the ground and how sharply upward mobility varied across the areas in question. Lastly, we exclude a few tracts that already had a large concentration of voucher holders, based on the idea that additional services were not necessary to facilitate moves to such areas.

B   Program Costs

This appendix describes how we estimate the cost of the CMTO program and compares the cost of CMTO to the costs of other housing mobility programs. There are several important contextual factors that may affect how transferable the cost estimates below are to other housing markets and settings. In particular, both the Housing Assistance Payments (HAP) and financial assistance (e.g., security deposits) are in part driven by high housing costs in the Seattle metropolitan area. In contrast to some other mobility programs, we provided no post-move services to families in CMTO. Finally, CMTO services were implemented by a local non-profit who provided services at a regional level across both housing authorities; the availability of similar non-profits in other areas may differ.

B.A   Costs of the CMTO Program

In Panel A of Table 3, we estimate the average up-front cost of CMTO services per voucher issued at $2,661. This cost figure sums three components, detailed in Panel B and discussed in further detail below: financial assistance, the cost of program services, and costs associated with administering CMTO incurred by the public housing authorities. When characterizing the services offered to the CMTO treatment group, we find the per-issuance cost to be the most natural measure of the cost of the program as it reflects the actual outlay of funds for each family and is not driven by outcomes

that may be affected by the experiment itself (e.g., lease-up rates). However, when estimating total expenditures for a projected number of lease-ups (and when comparing to other interventions that report only this metric), practitioners may find it useful to consider the per leased-up voucher cost, which divides average cost per issuance by the lease-up rate. For the CMTO treatment group, the lease-up rate was 87%, resulting in a per-lease cost of CMTO of $3,045. A third cost metric that may be useful is the average cost per move to a high-opportunity neighborhood. We calculate this cost measure by inflating cost-per-lease-up by the fraction of leased-up households who moved to a high-opportunity neighborhood.[51] In CMTO, 61% of treatment-group families who leased up moved to a high-opportunity area, resulting in a cost per opportunity move of $5,006.

To put these costs into context, we calculate the average lifetime housing assistance payment (HAP) expenditure for an average control-group family ($1,422/month) over seven years (a typical voucher duration for families with children at KCHA and SHA historically). The up-front CMTO program cost of $2,661 is 2.2% of this seven-year HAP cost.

Panel B of Table 3 reports mean costs for each of the three components that are reflected in the total cost estimates discussed above. In what follows, we explain how each of these estimates are constructed.

Financial Assistance Costs. Using the case-management database described in Section 4, we estimate an average financial assistance payment of $1,043 (across all treatment group households issued vouchers). The standard deviation is $1,253 and the maximum payment is $4,630. These expenses include security deposits (average $811/voucher issued), pro-rated rent ($72/voucher), renter's insurance ($40/voucher), screening fees ($46/voucher), administrative fees ($44/voucher), holding fees ($23/voucher), and a miscellaneous category of expenses ($8/voucher). As some of the financial assistance components are contingent on leasing up in an opportunity area, costs for the average family leasing up in an opportunity area are significantly higher (approximately $1,899).

The housing authorities provide some security deposit assistance to all families issued vouchers, even those in the control group. To account for control-group security deposit usage, we estimate the fraction of the control group that uses security deposit assistance by PHA (73% for KCHA and 9% for SHA) along with the average security deposit expense by PHA. We estimate that the PHAs spend an average of $274 on security-deposit assistance per voucher issued to control group families – a cost that would have been paid even in the absence of the CMTO program. Therefore, when calculating the incremental CMTO program costs, we subtract $274 from the mean gross financial assistance of $1,043.

Program Service Costs. We estimate program services costs per issuance to be $1,500. We arrive at this estimate by calculating the (fixed) annual cost to administer the program and dividing by the number of vouchers we estimate to be a feasible annual load for that staffing level (264). We estimate the feasible annual load based on the PHAs' estimation that the program staff were operating at steady-state peak capacity from September to November 2018. Their workload during these months reflected an average of 22 issuances per month in the months prior, leading to an annual load of 264 issuances per year.

The fixed program costs include salary and benefits for four full-time staffers, half of one full-time manager, and one full-time administrative assistant, as well as various costs incurred by the program contractors: mileage and training costs ($2,000/month), materials and supplies ($1,000/month), overhead such as utilities ($2,500/month), interpreter costs ($600/month), and other miscellaneous costs ($1,000/month) including cell phones, postage, and insurance. The total

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51. Note that this approach does not use average costs conditional on moving to an opportunity neighborhood because some service costs are incurred for all families issued vouchers, regardless of whether they ultimately move to opportunity or not.

annual cost is \$396,092, which we divide by 264 families to arrive at a per-family cost of \$1,500.[52]

PHA Administrative Costs. We estimate the marginal costs for administration of the CMTO program per issuance to be \$392. This category consists of salary and benefits for two PHA project managers spending 50% of their time managing CMTO service implementation divided by 264 annual voucher issuances. Although many other PHA staff worked on CMTO (including an estimated 5% of a senior manager's time), we follow standard capital budgeting practices by not including their time as a CMTO cost because these PHA labor costs would likely have been incurred by the PHAs anyway even without the CMTO project. We exclude start-up costs (PHA staff development time, piloting, grant writing time, etc.) from PHA administration costs to estimate the cost of administering a similar program going forward.

Housing Assistance Payment Costs. Since SHA and KCHA offer families tiered payment standards based on neighborhood rental costs and many high-opportunity areas fall in higher tiers, the CMTO program increases the annual voucher payments made by the housing authorities by inducing more families to move to high-opportunity areas. In Panel C of Table 3, we estimate this incremental cost as the difference between average treatment-group HAP expenditures (\$1,641/month) and average control-group HAP expenditures (\$1,422/month) among households who leased up. This results in a monthly difference of \$219 additional HAP expenditure on the treatment group over that of the control group (\$2,626/year). We also report the incremental HAP cost relative to the control group mean in percentage terms (15.4%), a measure that may be more transferable to lower-cost housing markets than Seattle.

B.B   Comparison with Costs of Other Mobility Programs

Appendix Table 1 compares the cost of the CMTO program with the costs of other mobility programs. Overall, the cost of the CMTO program is similar to that of other mobility programs (many of which either required moves to high-opportunity neighborhoods or had much smaller impacts on the fraction of families moving to opportunity). Below, we provide details on our sources of these estimates.

Feins, McInnis, and Popkin (1997) estimate the average cost of the counseling provided to the original MTO experimental group per opportunity move to be \$3,077. Assuming their estimates are in 1997 dollars, adjusting for inflation with the CPI implies an MTO program cost of \$4,814 in 2018 dollars. Cunningham and Popkin (2002) evaluate the Housing Opportunity Program (HOP), a mobility program funded by the Chicago Public Housing Authority. While Cunningham and Popkin (2002) do not provide cost estimates, Schwartz, Mihaly, and Gala (2017) report a nominal cost per opportunity move for HOP of \$3,528 (\$4,925 in 2018 dollars, assuming the original estimates are in 2002 dollars).

Rinzler et al. (2015) use cost data from the Baltimore Housing Mobility Program (BHMP) to model costs per opportunity move for a hypothetical housing mobility pay-for-success program of \$3,235 in 2015 dollars (\$3,427 in 2018 dollars). Program costs as defined in their model consist of mobility program services, including counseling, housing search assistance, and landlord engagement. BHMP resulted from a court order desegregating Baltimore public housing and has several programmatic differences from CMTO, such as not offering financial assistance but offering post-move support and requiring families to move to an opportunity neighborhood. Administrative costs for administering the HCV program are not included in cost estimates. Costs estimates are calcu-

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52. Some of the staff time was spent on research-specific asks, such as entering data into the MIS system. We have been conservative and included this time in our cost estimates, noting that a similar program without a research component would probably still have an administrative burden and possibly face other costs the staff did not happen to incur, such as paid family leave, etc.

lated as BHMP's total expenditure divided by their total number of lease-ups. One complication in comparing this estimate to CMTO's cost per lease-up is that differences in cost per lease could be driven by differences in lease-up rates.

Schwartz, Mihaly, and Gala (2017) evaluate a mobility program by the Chicago Regional Housing Choice Initiative intended to provide light-touch counseling (and no financial assistance) using a randomized controlled trial. In 2017 dollars, they estimate a counseling cost per opportunity move of $2,869 ($2,939 in 2018 dollars).

Sard, Cunningham, and Greenstein (2018) propose a hypothetical HCV program that would include mobility services and a home-visiting program. The mobility services would include housing search assistance, credit repair, opportunity area education, and landlord-tenant mediation. They estimate a cost of $4,500 per issuance for such a program.

C Qualitative Study: Methods

This appendix provides further information on the methods used in the qualitative component of the study, described in Section VI.

Sample Definition. To create the sample for the qualitative interviews, we stratified by housing authority (SHA, KCHA), treatment status (treatment, control), and lease up status (leased up, still searching as of March 2019). If the participant had not yet received a voucher or received a voucher but was still searching for housing, we categorized them as "still searching." We then randomly selected participants from each stratum. Appendix Table 2 shows the number and percentage of participants we selected from each category.

The sampling frame heavily weighted treatment group participants and participants who were still searching for housing to ensure that we would be able to collect data about the housing search process. In all, we sampled 149 treatment households (67% of the treatment group) and 53 control households (25% of the control group). Of these targeted families, 80% responded and were successfully interviewed.

Recruitment. The qualitative research team was led by Stefanie DeLuca and comprised five graduate students and nine undergraduate students from Johns Hopkins University. Many of the students had previous qualitative research experience, and several had experience working on housing mobility programs specifically. Eight graduate students from the University of Washington were also hired to help with data collection. We also employed a local research firm, MEF Associates, to assist with ongoing data collection. In all, 30 people conducted interviews since the project's beginning.

The majority of interview respondents were recruited through phone calls, although some responded to recruitment letters we sent through mail and email. Once we made contact, most people (91%) agreed to an interview immediately or agreed to schedule one at a more convenient time. The biggest barrier to recruitment was disconnected phone numbers and incorrect addresses, reflecting the financial and housing precarity of program participants.

Our sample included some families with limited English proficiency, reflecting the diversity of program participants. To address language barriers, families chose one of three translation options to complete an interview, whichever they felt most comfortable with: a neighbor, friend, or family member; a third-party in-person language interpretation service; or a third-party phone interpretation service.

Most interviews were conducted in respondents' homes. If the respondent was not comfortable meeting with our team at home, interviews were conducted at other locations they chose, such as local libraries or McDonald's restaurants. The semi-structured interviews lasted anywhere between

one and four hours, with most interviews lasting approximately two hours. Respondents were asked about their personal life – residential history, children's schools, employment and education history, and health – as well as their experiences working with the PHAs and (if in the treatment group) the CMTO program. All interviews were recorded and transcribed. The respondents were paid $50 for their time.

Narrative Interviewing. Our methods are derived in part from a long tradition in the social sciences, especially the work of urban sociologists who developed methods of observing social life and the ways individuals make meaning of their everyday routines (Anderson 1990, Becker et al. 1961, Burawoy 1979, Edin and Lein 1997, Liebow 1967). Specifically, we used narrative interviewing techniques, a semi-structured approach to interviewing that uses open-ended questions to allow a wide range of responses to emerge, with targeted follow-up questions to ensure all interviews covered the same material (see DeLuca, Clampet-Lundquist, and Edin (2016) and Boyd and DeLuca (2017) for more on this method). These interviews create a natural, in-depth conversation, rather than a clinical series of questions and short answers.

Interviews are conducted without copies of the interview guide visible. Interviewers instead memorize a detailed interview protocol (with a shorthand notecard nearby for review of interview topics if needed), and the interviews are recorded. This allows the interviewers to focus on the respondent, making eye contact and not causing distraction by flipping through paper and writing notes. The approach communicates to respondents that we are focused entirely on hearing their story and perspective, rather than on simply going through a list of specific questions by rote. Previous work has shown that more detailed stories and unexpected answers are more likely to emerge from this approach, especially issues unanticipated by the researchers (in sharp contrast to forced choice response survey questions).

We start our interviews with a broad question: "Tell me the story of your life." This gives the respondents the sense that we are interested in the whole story of who they are. Further, the opening directive signals to them that we want them to talk—a lot—and that this is not a survey. Rather than merely documenting the events of our research participants' lives, the interviewing approach provides a setting in which respondents reveal how they see things, what they feel is important, how they make decisions, how they have made sense of their past and imagine their future. Respondents can then answer in their own words, without worrying about giving a "wrong" answer or saying too much. The protocol not only enriches the study findings by allowing for a broad range of answers, but it also reduces stress and the chances that respondents will feel coerced to say particular things.

In-depth interviewing can be especially effective for creating rapport and developing trust for stigmatized groups, such as low-income families receiving housing vouchers. By conducting interviews with empathy and non-leading, non-judgmental questions, respondents are often put at ease, and may feel less scrutinized. If respondents have some control over the way they can answer questions, and feel that the interviewer is truly interested in them and lets them speak at length, they may feel comfortable to open up more candidly.

Analysis. The research team used themes from previous research, fieldnotes, and transcripts of the interviews to create a codebook for the data set. These included codes for the five themes identified in the paper, such as whether respondents mentioned feeling supported by CMTO staff, whether CMTO staff worked with landlords on respondents' behalf, and whether respondents mentioned receiving financial assistance for their move. Descriptions of the codes for the five mechanisms are as follows:

Mechanism #1 – Communication and Emotional Support. This code covers the experiences that treatment respondents have with the CMTO staff that foster a sense of psychological or emotional support, often as a result of what they describe as frequent and encouraging communication and

check-ins from the staff. These communications foster a sense that the staff are accessible, responsive and able to help when and how respondents need to be helped so that they can find housing. This code also describes instances in which families report that the services CMTO provided for them gave them a sense of emotional support, "boost" of confidence, happiness, relief, reduced stress (the last component overlaps at time with Mechanisms 3-5). Segments include instances when families tell us that they feel like someone has "your back," that they aren't doing this alone, that someone can vouch for them, and that their housing search and lease-up process would not have been possible without the CMTO staff's help. Some of this includes reports that CMTO staff had catered to families' individual needs, and that CMTO staff asked them what they "wanted" what "their vision" was for their family. For some respondents, this includes the process of creating a rental resume to feel confident and better positioned to communicate with landlords, and for others this includes mentions of how well the CMTO staff explained everything so that they could understand the process and feel capable of searching in opportunity areas. In sum, this code reflects the work that CMTO staff do that keeps families feeling optimistic about their chances of leasing up, and prevents families from dropping out of the CMTO program when things get difficult or take longer than expected.

Mechanism #2 - OA Motivation. This code covers specific language that respondents use to describe their personal desire to move to and live in an opportunity area, and excitement about the fact that the CMTO program is focused on helping families live in higher opportunity neighborhoods. This code is more specific than just mentions of opportunity areas, and includes respondents' discussing the benefits of living in an opportunity area as an important part of their residential decision-making and housing search processes.

Mechanism #3 - Streamlining. This code covers any discussion of how the CMTO staff streamlined the search process for respondents to make finding a home with the voucher easier, especially at difficult points in the housing search and lease-up process. This code may include segments on how respondents had very little "bandwidth" to do the kind of housing search they would have liked and that CMTO made doing this search possible. In these cases, not having enough "bandwidth" means that because there are so many things to attend to and not enough time, money or support, it is very difficult to focus on the housing search, applications and other paperwork, or contacting landlords (because parents are searching for work, juggling child care, going to work, coping with health problems, transportation issues, etc.) This code includes concrete actions that CMTO staff took that simplified/reduced the overwhelming aspects of the process of getting housing and can include housing unit referrals, neighborhood tours, and discussion of advice/guidance that CMTO staff provided on how to search for housing (that then actually made their searches more effective). This code also includes discussions of how CMTO staff accelerated the process for landlords as well by expediting inspections, filling out paperwork, calling landlords for unit visits, signing onto the tenant portal for an apartment complex on behalf of a tenant. This code might include respondents expressing sentiments such as: "I just handed it over to them after I said yes/landlord said yes and they did everything else!" (This code can overlap with Mechanisms #4 and #5).

Mechanism #4 - Brokering. This code covers respondents' reports of CMTO program staff serving as a broker between them and landlords/property managers during the housing search, application, or lease up process. Examples of this include CMTO staff communicating directly with landlords and other institutional representatives and/or customizing the financial assistance for each family's circumstances based specifically on their communication with landlords to get them moved in (examples include utility bills, rental insurance, bigger security deposits for those with eviction/credit issues, holding fees, etc.) It also includes CMTO staff talking on behalf of respondents to landlords during a point in the process that can sometimes be demoralizing and/or a point of 'exit' for landlords (when landlords waver about renting to a family with a history of poor

credit). Families might mention that the staff "vouched" for them or served as actual references. This code also includes people talking about finding their own units, but then CMTO staff stepping in and taking care of the next steps to make it happen on the landlord or property managers' side (some of this overlaps with Mechanism #3, to the extent that activities that streamline also make landlords happier and more likely to agree to rent the unit to the CMTO family).

Mechanism #5 - Short-Term Financial Assistance. This code covers any description of the financial assistance given by CMTO staff that helps respondents move into their units. This assistance may be used for security deposits, application/holding fees, moving costs, previous rent balances, or renter's insurance. The code includes not only what the financial assistance was used for, but also when, and why it worked in that instance (likely to overlap with Mechanisms #3 and #4), to indicate how it was strategically deployed by CMTO staff.

A team of coders then used this codebook to identify the prevalence of the five themes described above in individual interviews with treatment group families who had moved to high-opportunity areas. This team consisted of 13 members, 9 from Johns Hopkins University who did the initial coding and 4 from the University of Washington who also coded the same interviews so that we could estimate inter-coder reliability. Two groups of coders analyzed treatment cases for the prevalence of the five mechanisms as well as other general aspects of voucher moves (e.g. satisfaction). Incidents of discrepancy between the coders' judgments – which occurred in fewer than 25% of the cases – resulted in another review of the transcript and consultation with DeLuca to make a determination as to whether a mechanism or mechanisms were indeed present or absent for particular respondents and/or whether the code definitions themselves needed to be clarified or refined.

Ethnographic Observations. Although we focus in Section VI on information obtained directly from our family interviews, our fieldwork also included other elements of observation that support our conclusions. Every time we interviewed families, we spent hours in their homes, talking to other household members and friends as they came and went, playing with children, meeting neighbors, and watching neighborhood activities. During recruiting, we drove repeatedly up and down neighborhood streets, knocking on doors, and eating at local fast-food places during breaks. We gave people rides so that they could errands, dropped people off at the social service agencies so they could apply for utility assistance, and we took them to lunch or dinner, sometimes with other family members. In other words, the interviews are part of a larger set of fieldwork practices, and we took detailed notes on all of those as well.

Researchers digitally recorded initial impressions of the interviews immediately after the interviews occurred, and wrote fieldnotes for each interview. Fieldnotes describe everything that happened during an interview visit, including: the setting (usually the housing unit and neighborhood blocks surrounding the house); what participants were like (e.g., attire, demeanor); interactions with other family members; any other information that was not recorded (warm-up and exiting conversations); and conversations that took place over the course of the interview itself. The post-interview fieldnotes also provide a summary of the interview, with a focus on central research questions.

Analyses in the paper are also informed by the following ethnographic data: three in-person observations of families with CMTO staff at their initial one on one meetings; attendance at two CMTO staff meetings; four informational meetings with all of the CMTO family and housing search assistance team members (two by phone and two in person); four in-person meetings with CMTO study intake staff at both SHA and KCHA; one informational meeting with staff from the KCHA voucher program; and over two years of weekly phone meetings with PHA and CMTO research partners, MDRC implementation researchers, and J-PAL staff.

D   Economic Model of Neighborhood Choice

In this appendix, we derive the bounds on willingness to pay discussed in Section V.F in a canonical model of neighborhood choice with heterogeneous preferences.

Consider a frictionless discrete choice framework in which family i chooses neighborhood type $j \in \{H, L\}$ corresponding to high-opportunity and low-opportunity neighborhoods, respectively, to maximize their indirect utility of living in neighborhood j. The indirect utility of living in neighborhood j for family i is

$$u_{ij} = \varepsilon_{ij} - P_j \tag{3}$$

where ε_{ij} is the idiosyncratic preference that household i has for neighborhood j and P_j is the cost of living in neighborhood j. We normalize the coefficient on costs to one so that preferences ε are interpretable in dollar terms.

Families choose the neighborhood type that maximizes their indirect utility and therefore move to an opportunity neighborhood whenever

$$u_{iH} > u_{iL} \tag{4}$$

$$\underbrace{\varepsilon_{iH} - \varepsilon_{iL}}_{\text{marginal benefit of } H} > \underbrace{P}_{\text{marginal cost of } H} \tag{5}$$

where $P = P_H - P_L$ denotes the marginal cost of moving to neighborhood H. Absent any additional resources, the share of families moving to an opportunity neighborhood s_H is

$$s_H = \Pr(j^* = H) = \Pr(\varepsilon_{iH} - \varepsilon_{iL} > P). \tag{6}$$

In this framework, the fact that 17.6% of families in the control group who lease up move to high-opportunity areas implies that $\hat{s}_H = 0.176$. That is, 82.4% of families have utility of living in the high-opportunity neighborhood that is less than the cost of living in a high-opportunity neighborhood, i.e. have a net willingness-to-pay for low-opportunity areas that is positive: $WTP_i = \varepsilon_{iL} - \varepsilon_{iH} + P > 0$.

Now consider the CMTO treatment group. For this group, the indirect utility of moving to neighborhood j is

$$u_{ij}^T = \delta_i S_j - P_j + \varepsilon_{ij}, \tag{7}$$

where S_j is a variable representing the cost of the moving assistance services offered by the public housing authority for households moving to neighborhood j, including security-deposits and search assistance services. In the CMTO experiment, $S_L = 0$ and $S_H = \$2,660$. The coefficient δ_i governs the translation of the dollar value of these services to utility. In an environment with no frictions where these services can be purchased in the market for their average cost, we would expect $\delta_i \leq 1$: families should value the services at most at their marginal cost, as they would have already purchased them otherwise.

Treatment-group families choose to move to a high-opportunity neighborhood when

$$u_{iH}^T > u_{iL}^T \tag{8}$$

$$\varepsilon_{iH} - \varepsilon_{iL} > P - \delta_i S_H \tag{9}$$

and hence the share of treatment-group families that lease up who move to an opportunity neigh-

borhood is

$$s_H^T = \Pr(\varepsilon_{iH} - \varepsilon_{iL} > P - \delta_i S_H). \tag{10}$$

For the CMTO treatment group, $\hat{s}_H^T = 0.607$, meaning that 60.7% of families preferred high-opportunity neighborhoods after they were provided with the services targeted at high-opportunity areas. Given $\delta_i \leq 1$, we can infer these 60.7% of families have a net willingness to pay (WTP) for low-opportunity areas that is less than \$2,660, i.e., $WTP_i = \varepsilon_{iL} - \varepsilon_{iH} + P < \$2,660$.[53]

Putting together these two bounds, we infer that

$$\Pr(WTP_i \in [0, S_H]) = \Pr(\varepsilon_{iH} - \varepsilon_{iL} - P \in [-S_H, 0]) > s_H^T - s_H = 0.431, \tag{11}$$

if $\delta_i \leq 1$. That is, the frictionless model implies that 43.1% of families have net WTP for a low-opportunity area between \$0 and \$2,660, i.e., a large mass of families are close to indifferent between high- and low-opportunity neighborhoods as shown in Figure 12.

In an environment where families face frictions in housing search or other constraints (e.g., a lack of liquidity to pay for services up front), the value of the CMTO services δ_i could be greater than one. In this setting, choices can no longer be directly translated into preferences (WTP). In particular, some families may have very high WTP for high-opportunity areas yet are prevented from moving to such areas (absent CMTO-type services) due to frictions in the housing search process. As discussed in the text, we believe that such a model is more likely to match our experimental results, and hence view unpacking and modeling the structure of these search frictions as a valuable direction for further work.

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53. Of course, not everyone in the treatment group received exactly \$2,660 in services. Appendix B discusses heterogeneity in services take-up and notes that the maximum cost of financial services taken up was \$4,630. A conservative upper bound for the cost of CMTO services (replacing \$1,043 with \$4,630 in Table 3) would therefore be \$6248. However, we focus on the average cost of around \$2,660 as it better represents the overall expense required to support the treatment effects we see here.

Table 1

Summary Statistics and Balance Tests for Households in Experimental Sample

	Pooled	Control			Treatment			P-Value of T-C Difference
	Mean (1)	Mean (2)	SD (3)	N (4)	Mean (5)	SD (6)	N (7)	(8)
A. Head of Household Demographics								
Age (years)	34.2	34.2	8.9	208	34.2	7.6	222	0.962
Annual Household Income ($)	19667	19517	12433	207	19806	13348	222	0.886
% Speak English (w/o Translator)	81.6	80.3	39.9	208	82.9	37.8	222	0.512
% Born Outside the U.S.	35.0	34.3	47.6	207	35.6	48.0	222	0.750
% Black Non-Hispanic	49.3	49.8	50.1	205	48.9	50.1	219	0.908
% White Non-Hispanic	24.5	22.9	42.1	205	26.0	44.0	219	0.475
% Hispanic	8.5	9.3	29.1	205	7.8	26.8	219	0.618
% Asian Non-Hispanic	6.6	6.3	24.4	205	6.8	25.3	219	0.856
% Female Head of Household	79.8	75.7	43.0	202	83.6	37.1	214	0.048**
% Married Head of Household	12.0	11.9	32.4	202	12.1	32.7	214	0.790
% Less than High School Grad	21.6	27.8	44.9	205	15.8	36.6	221	0.004***
% High School Degree	31.9	33.2	47.2	205	30.8	46.3	221	0.528
% Attended Some College	41.5	32.7	47.0	205	49.8	50.1	221	0.000***
% BA or more	4.9	6.3	24.4	205	3.6	18.7	221	0.186
% Homeless	13.3	14.5	35.3	207	12.2	32.8	222	0.494
% Currently Working	56.4	59.9	49.1	207	53.2	50.0	222	0.146
% Works Full-Time (Over 35 Hours/Week)	28.2	30.4	46.1	207	26.1	44.0	222	0.282
% Commute > 30 min to Work	34.2	34.7	47.8	124	33.6	47.4	116	0.830
% with Car and Driver's License	63.8	59.9	49.1	207	67.4	47.0	221	0.104
Number of Children	2.2	2.2	1.4	208	2.2	1.4	222	0.756
Children's Average Age	6.6	6.6	4.0	200	6.7	3.8	217	0.793
B. Neighborhood-Related Questions								
% Starting in High-Opportunity Tract	12.5	12.2	32.8	164	12.7	33.4	173	0.887
% Satisfied with Current Neighborhood	50.9	47.9	50.1	194	53.6	50.0	207	0.261
% Would Leave Neighborhood if Got Voucher	53.5	57.5	49.6	193	49.8	50.1	207	0.133
% Feel They Could Find Place in New Neighborhood	54.6	57.3	49.6	185	52.0	50.1	198	0.310
% Could Pay for a Move	28.7	32.4	46.9	207	25.2	43.5	222	0.116
% Good with Moving to Racially Diff Neighborhood	78.7	83.5	37.2	206	74.2	43.8	221	0.017**
% Good with Moving to Specific Neighborhood in Opportunity Area	71.8	72.5	44.8	207	71.2	45.4	222	0.699
% Considering Different School for Any Child	58.6	61.4	48.8	158	56.1	49.8	173	0.367
% Unsatisfied with Any Child's Current School	15.1	16.5	37.2	158	13.9	34.7	173	0.536
% Primary Motivation to Move is Schools	42.7	43.0	49.6	207	42.3	49.5	222	0.890
% Primary Motivation to Move is Safety	21.7	20.3	40.3	207	23.0	42.2	222	0.476
% Primary Motivation to Move is Bigger/Better Home	15.6	15.0	35.8	207	16.2	36.9	222	0.726
C. Characteristics of Origin Neighborhood (Census Tract)								
Predicted Mean Household Income Rank (p=25)	43.9	44.0	4.1	205	43.7	4.2	219	0.477
Incarceration Rate (p=25)	2.1	2.1	1.4	205	2.2	1.4	219	0.282
Teen Birth Rate (Women; p=25)	23.1	23.2	8.2	205	23.1	7.8	219	0.922
% in Poverty (2016 ACS)	16.6	15.9	10.2	205	17.2	9.8	219	0.161
% Black (ACS 2013-2017)	11.5	11.6	11.0	205	11.5	10.1	219	0.932
% Low-Inc. 3rd Graders Proficient in Math (2015)	41.3	41.6	11.5	201	41.0	11.9	214	0.569
% in Extreme Poverty (Rate > 40%) Tract (2016 ACS)	2.6	2.9	16.9	205	2.3	15.0	219	0.736

F-Test	F-Statistic	P-Value	N
	1.182	0.216	430

Notes: This table presents baseline summary statistics for the 430 households who were issued a voucher in the CMTO experiment. We present means for the full sample and means, standard deviations, and counts for the treatment and control groups separately. In Column 8, we show the p-value for a test of the difference between treatment and control group means, estimated by regressing the relevant outcome variable on the treatment group indicator and an indicator for being in the Seattle or King County housing authority (since randomization was within PHA). The outcomes in Panels A and B come from the baseline survey administered as part of this study, complemented with administrative data from the PHAs at the time of voucher issuance (in particular, annual household income, race and ethnicity, head of household marital status and gender come from PHA administrative data); see Appendix Table 10 for definitions of these variables. The first three variables of Panel C show Census tract-level measures of mean household income rank, incarceration rates and teen birth rates for children whose parents were at the 25th percentile of the national household income distribution drawn from the Opportunity Atlas (Chetty, Friedman, Hendren, Jones, and Porter 2018). The remaining rows of Panel C are obtained from publicly available ACS data and the Stanford Education Data Archive (for the math proficiency variable). The number of observations varies across outcomes because of non-response. We report an omnibus test of balance by regressing treatment status on all baseline variables in the table, controlling for PHA, and compute the F-statistic from a test of the variables' joint significance. To preserve the full sample in that regression, we replace missing values in each variable with a constant and add an indicator variable for an outcome being missing. The resulting F-statistic and p-value are shown at the bottom of the table. All regressions use robust standard errors. *** p<0.01, ** p<0.05, * p<0.1

	Share Moving to High-Opportunity Area (%), Unconditional on Lease-Up					
	Control Mean	Treatment Mean	Treatment Effect	SE	N	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)
A. Pooled and by Housing Authority						
All Families	15.1	53.0	37.9	4.2	427	0.000 ***
All Families (Controls)	15.1	52.8	37.7	4.5	427	0.000 ***
Seattle Housing Authority	11.9	53.0	41.1	6.0	201	0.000 ***
King County Housing Authority	18.3	53.3	35.0	5.9	226	0.000 ***
B. By Head of Household Demographic Characteristics						
Black Non-Hispanic	10.9	47.6	36.7	5.8	208	0.000 ***
White Non-Hispanic	19.6	62.3	42.7	9.0	103	0.000 ***
Other Race/Ethnicity	19.6	56.0	36.4	8.6	111	0.000 ***
Born Outside the U.S.	12.7	50.4	37.7	6.7	150	0.000 ***
Born in the U.S.	16.5	55.8	39.2	5.3	276	0.000 ***
English Isn't Primary Language	12.8	56.8	44.0	9.5	80	0.000 ***
English Is Primary Language	15.8	52.4	36.6	4.7	346	0.000 ***
20 Years or More in Seattle/King County	15.1	51.4	36.3	6.5	183	0.000 ***
Less Than 20 Years in Seattle/King County	15.3	54.3	39.1	5.6	243	0.000 ***
Started in High Opportunity Tract	25.0	72.6	47.6	13.5	42	0.000 ***
Didn't Start in High Opportunity Tract	12.7	45.7	33.0	4.9	293	0.000 ***
Income ≤ $19,000 (Sample Median)	16.8	53.4	36.6	6.0	219	0.000 ***
Income > $19,000 (Sample Median)	13.6	52.8	39.2	6.0	207	0.000 ***
No College	9.8	53.2	43.5	5.7	226	0.000 ***
Some College or More	24.1	52.4	28.3	6.7	197	0.000 ***
Currently Working	12.9	45.1	32.2	5.6	242	0.000 ***
Currently Not Working	18.8	61.5	42.8	6.5	184	0.000 ***
Uses Child Care	18.8	44.8	26.0	6.2	211	0.000 ***
Doesn't Use Childcare	11.7	60.9	49.2	5.6	215	0.000 ***
C. By Perceptions About Moving at Baseline						
Feels Good About Moving to an Opportunity Area	17.6	53.1	35.5	5.1	306	0.000 ***
Doesn't Feel Good About Moving to an Opportunity Area	8.9	53.4	44.5	7.4	120	0.000 ***
Satisfied With Current Neighborhood	14.1	55.1	41.0	5.9	203	0.000 ***
Unsatisfied/Indifferent With Current Neighborhood	17.2	50.8	33.6	6.4	195	0.000 ***
Sure Wants to Leave Current Neighborhood	17.6	56.5	38.9	6.1	211	0.000 ***
Sure Wants to Stay in Current Neighborhood or Indifferent	13.4	48.6	35.2	6.2	186	0.000 ***
Feels Good About Moving to Racially Different Neighborhood	14.8	54.7	39.9	4.8	333	0.000 ***
Feels Bad/Indifferent About Moving to Racially Different Neighborhood	17.6	49.0	31.3	9.5	91	0.001 ***
Sure Could Pay for Moving Expenses	14.9	63.1	48.1	7.7	123	0.000 ***
Not Sure Could Pay for a Moving Expenses	15.3	50.1	34.8	5.0	303	0.000 ***
Sure Could Find a New Place	16.3	51.5	35.1	6.2	207	0.000 ***
Not Sure Could Find a New Place	16.7	54.6	37.9	6.7	173	0.000 ***
D. By Children Characteristics						
Mean Children Age at or Above Median (6.3 years)	15.2	51.9	36.7	6.1	207	0.000 ***
Mean Children Age Below Median (6.3 years)	15.3	52.6	37.3	6.0	207	0.000 ***
More than 2 Children	13.4	44.2	30.7	7.1	137	0.000 ***
2 Children or Fewer	15.9	58.4	42.5	5.1	290	0.000 ***
Considering Different Schools	12.6	52.5	39.9	6.1	192	0.000 ***
Not Considering Different Schools	16.4	52.5	36.1	7.6	137	0.000 ***

Notes: This table reports treatment effects by subgroup, estimated using a regression of an indicator for leasing up in a high-opportunity area on the treatment group indicator and a PHA fixed effect. In row 2, we additionally control for the baseline characteristics shown in Table 1. We exclude 3 households whose voucher was transferred to a different PHA in this table. See Appendix Table 10 for definitions of the variables used to construct the subgroups. All regressions use robust standard errors. *** p<0.01, ** p<0.05, * p<0.1

Table 3
Creating Moves to Opportunity Program Costs

	Average Cost
A. Total Costs	
Cost of CMTO services per issuance	$2,661
Cost of CMTO services per family leased	$3,045
Cost of CMTO services per opportunity move	$5,006
Cost of CMTO services per family issued / 7-year HAP costs per leased family	2.2%
B. Costs by Service Category	
Cost of CMTO financial assistance per issuance	$1,043
Cost of CMTO program services per issuance	$1,500
Cost of PHA CMTO administration per issuance	$392
Cost savings of PHA services paid by CMTO	($274)
C. Housing Assistance Payment (HAP) Costs	
Incremental HAP cost per lease per year	$2,626
Incremental HAP / average HAP costs per leased family	15.4%

Notes: This table reports average cost metrics for the CMTO program. Panel A reports four measures of average total CMTO service costs: per voucher issued, per family leased up, per opportunity move completed, and per family issued as a percentage of 7-year housing assistance payment (HAP) voucher costs for one family. The last measure is defined as the cost of CMTO services per issuance divided by the average HAP cost for the control group over seven years (a conservative estimate of the average voucher duration for families with children) in KCHA and SHA. Panel B reports average costs by category. Financial assistance costs include security deposits, adminstrative fees, holding fees, pro-rated rent, renter's insurance, and screening fees. Program services include costs paid to the Navigator service providers, which include costs for staff, management, administrative assistance, mileage, overhead, and materials. PHA administration costs per issuance consist of a project manager at each PHA spending 50% time managing CMTO service implementation. In Panel A, Cost of CMTO services per issuance consists of all CMTO programmatic costs listed in Panel B, excluding the average control group security deposit assistance of $274 that would have been provided by the PHAs regardless of CMTO, as part of existing PHA policy. Panel C reports the incremental HAP expenditure for the treatment group relative to the control group per family that leased up, driven by the fact that treatment group families leased units in more expensive areas on average, which had higher HAP payments because of the tiered payment standards used in KCHA and SHA. The last row shows incremental HAP expenditure as a share of the average HAP cost per family leased in the control group.

Table 4

Impacts of Financial Incentives: Difference-in-Difference Estimates Based on Payment Standard Reforms

Reform:	KCHA 5 Tier Voucher Payment Standard Reform				SHA Family Access Supplement			
Outcome:	% Moving to High Opportunity		Median 2 BR Rent in Destination Tract ($)		% Moving to High Opportunity		Median 2 BR Rent in Destination Tract ($)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DD Estimate	-3.59	-4.70	55.92	70.52	13.79***	13.82***	-22.31	-11.84
	(5.75)	(6.21)	(49.23)	(52.05)	(5.11)	(5.26)	(74.14)	(76.50)
Controls (Fixed Effects):								
Number of Children		X		X		X		X
Month Voucher Issued		X		X		X		X
Sample	KCHA and SHA Voucher Recipients with Children				All SHA Voucher Recipients			
Observations	533	528	325	323	534	534	414	414

Notes: This table shows difference-in-difference estimates of the effects of changes in payment standards on the rate at which families move to higher-opportunity or more expensive neighborhoods using the OLS regression specification in equation (2). Columns 1-4 estimate the effects of KCHA's 5-tier voucher payment standard introduced in March 2016, which increased payment standards in more expensive neighborhoods. We treat KCHA as the "treatment" group and SHA as the "control" group and use data on households with children who were issued a voucher in either KCHA or SHA between July 2015 and November 2016 to estimate these specifications. Columns 5-8 estimate the effects of SHA's Family Access Supplement (FAS), which provided higher payments for families with children moving to areas designated as "high opportunity" in CMTO and was introduced in February 2018. These specifications use data on households in SHA with and without children who were issued a voucher between August 2017 and October 2018, excluding those issued a voucher between February and April 2018, which is when the CMTO pilot took place (see Figure 11 and Section 7a for details). The dependent variable in Columns 1-2 and 5-6 is an indicator for moving to a "high opportunity" neighborhood, as defined in Figure 2 in the CMTO experiment. The dependent variable in Columns 3-4 and 7-8 is the median rent for two-bedroom units (based on the 2011-2015 American Community Survey) in the tract where households leased up, restricting the sample to households who leased up before their voucher expired. The odd numbered columns show the raw difference-in-difference estimates using the specification in equation (2), without any additional controls. The even numbered columns add a set of indicator variables for the number of children in the household and the month in which the voucher was issued. Robust standard errors are reported in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix Table 1
Costs of CMTO vs. Other Mobility Programs

Program	Cost Metric	Estimated Cost	Source
1. Creating Moves to Opportunity	Cost per family issued	$2,661	Table 3
2. Creating Moves to Opportunity	Cost per opportunity move	$5,006	Table 3
3. Moving to Opportunity	Cost per opportunity move	$4,814	Feins et al. (1997)
4. Housing Opportunity Program	Cost per opportunity move	$4,925	Schwartz et al. (2017)
6. Baltimore Housing Mobility Program	Cost per opportunity move	$3,427	Rinzler et al. (2015)
7. Chicago Regional Housing Choice Initiative	Cost per opportunity move	$2,939	Schwartz et al. (2017)
8. Hypothetical Mobility Program	Cost per family issued	$4,500	Sard, Cunningham, and Greenstein (2018)

Notes: This table reports cost metrics for CMTO and other mobility programs. Costs in rows 3 and 4 and rows 6 and 7 have been adjusted for inflation to 2018 dollars using the CPI. See Appendix B for details on how these costs were computed.

Appendix Table 2
Qualitative Study Sampling and Response Rates

	Treatment	Control	Total N	N / Target Sample Size	N / Number Contacted
	(1)	(2)	(3)	(4)	(5)
A. Sampling Targets					
Still Searching (as of April 2019)	71 (100%)	24 (25%)	95		
Leased up	78 (50%)	29 (20%)	107		
Total Targeted	149 (67%)	53 (25%)	202		
B. Recruitment					
Interviewed	119	42	161	80%	85%
Refusals	13	4	17	8%	9%
Contact, No Interview Yet	9	2	11	5%	
No Contact/Bad Contact Info	8	5	13	6%	
C. Response Rate by Treatment Status					
N Interviewed / Target Sample Size	80%	79%			

Notes: This table shows the sampling scheme and response rates for the qualitative study sample. Panel A shows the number and percentage of participants who were randomly targeted for participation in the qualitative study from each group, based on their treatment status and lease-up status as of April 15, 2019 for households in the Seattle Housing Authority and April 23, 2019 in the King County Housing Authority. Panel B shows the number of households who we were able to successfully interview within this group; the number who refused; and the number whom we attempted to contact but were not yet able to interview or rearch. Column 4 shows the number of households in each of these categories as a share of all households targeted, and Column 5 shows household interviews and refusals as a share of households with whom we had some contact. Panel C shows the percentage of households interviewed as a share of the number of households targeted by treatment group.

	Full Sample		Qualitative Sample		Not in Qualitative Sample		P-Value of Qual vs. Non-Qual Diff.
	Mean (1)	N (2)	Mean (3)	N (4)	Mean (5)	N (6)	(7)
A. Head of Household Demographics							
Age	34.21	430	34.24	161	34.19	269	0.973
Annual Household Income ($)	19667	429	19739	161	19623	268	0.724
% Speak English (w/o Translator)	81.63	430	83.85	161	80.30	269	0.304
% Born Outside the U.S.	34.97	429	34.78	161	35.07	268	0.858
% Black Non-Hispanic	49.29	424	53.13	160	46.97	264	0.304
% White Non-Hispanic	24.53	424	21.88	160	26.14	264	0.356
% Hispanic	8.49	424	8.13	160	8.71	264	0.709
% Asian Non-Hispanic	6.60	424	7.50	160	6.06	264	0.522
% Female Head of Household	79.81	416	84.52	155	77.01	261	0.050*
% Married Head of Household	12.02	416	10.97	155	12.64	261	0.365
% Less than High School Grad	21.60	426	18.63	161	23.40	265	0.145
% High School Degree	31.92	426	31.68	161	32.08	265	0.851
% Attended Some College	41.55	426	44.72	161	39.62	265	0.347
% BA or more	4.93	426	4.97	161	4.91	265	0.917
% Homeless	13.29	429	13.66	161	13.06	268	0.909
% Currently Working	56.41	429	51.55	161	59.33	268	0.148
% Works Full-Time (Over 35 Hours/Week)	28.21	429	26.09	161	29.48	268	0.597
% Commute > 30 min to Work	34.17	240	36.14	83	33.12	157	0.617
% with Car and Driver's License	63.79	428	62.73	161	64.42	267	0.691
Number of Children	2.21	430	2.19	161	2.23	269	0.623
Children's Average Age	6.62	417	6.63	158	6.62	259	0.861
B. Neighborhood-Related Questions							
% Starting in High-Opportunity Tract	12.46	337	13.49	126	11.848	211	0.701
% Satisfied with Current Neighborhood	50.87	401	50.00	150	51.394	251	0.809
% Would Leave Neighborhood if Got Voucher	53.50	400	52.67	150	54.000	250	0.666
% Feel They Could Find Place in New Neighborhood	54.57	383	57.14	147	52.966	236	0.460
% Could Pay for a Move	28.67	429	29.19	161	28.358	268	0.994
% Good with Moving to Racially Diff Neighborhood	78.69	427	74.38	160	81.273	267	0.125
% Good with Moving to Specific Neighborhood in Opportunity Area	71.79	429	67.08	161	74.627	268	0.160
% Considering Different School for Any Child	58.61	331	59.52	126	58.049	205	0.883
% Unsatisfied with Any Child's Current School	15.11	331	19.05	126	12.683	205	0.142
% Primary Motivation Schools	42.66	429	39.13	161	44.776	268	0.252
% Primary Motivation Safety	21.68	429	19.25	161	23.134	268	0.283
% Primary Motivation Bigger/Better Home	15.62	429	19.88	161	13.060	268	0.070*
C. Characteristics of Origin Neighborhood (Census Tract)							
Predicted Mean Household Income Rank (p=25)	43.87	424	44.07	158	43.76	266	0.428
Incarceration Rate (p=25)	2.15	424	2.10	158	2.18	266	0.572
Teen Birth Rate (Women; p=25)	23.14	424	22.43	158	23.56	266	0.156
% in Poverty (2016 ACS)	16.58	424	17.07	158	16.29	266	0.546
% Black (ACS 2013-2017)	11.54	424	11.79	158	11.40	266	0.749
% Low-Inc. 3rd Graders Proficient in Math (2015)	41.30	415	41.22	153	41.35	262	0.976
% in Extreme Poverty Tract (2016 ACS)	2.59	424	1.90	158	3.01	266	0.340

F-Tests	F-Statistic	P-Value	N
Unconditional on Lease-up	0.892	0.661	430
Conditional on Lease-up	0.776	0.833	356

Notes: This table compares the households in the qualitative sample to the households in the full experimental sample. The qualitative sample is composed of all households successfully interviewed for the qualitative study. The set of households not in the qualitative sample is defined as all households in the experimental sample who are not included in the qualitative sample. In the last column, we show the p-value for a test of the difference between the qualitative and non-qualitative-sample means, estimated by regressing the relevant outcome variable on the an indicator for being in the qualitative sample along with the PHA indicator. We report an omnibus test of balance between the two samples by regressing the qualitative sample indicator on all variables shown in the table, plus a PHA indicator, and compute the resulting F-Statistic for the joint significance of these variables (excluding the PHA indicator). We do so in two ways: first, for all households who were issued a voucher, and second restricting the sample to households that either leased-up and were not part of the qualitative study or leased-up and were interviewed for the qualitative study after lease-up. See Table 1 and Appendix Table 10 for definitions of the variables. All regressions use robust standard errors. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Summary Statistics for Households in the Qualitative Sample

	Control		Treatment		P-Value of T-C Difference
	Mean (1)	N (2)	Mean (3)	N (4)	(8)
A. Head of Household Demographics					
Age	32.24	42	34.94	119	0.031**
Annual Household Income ($)	19047.62	42	19983.19	119	0.782
% Speak English (w/o Translator)	83.33	42	84.03	119	0.898
% Born Outside the U.S.	33.33	42	35.29	119	0.831
% Black Non-Hispanic	57.14	42	51.69	118	0.603
% White Non-Hispanic	19.05	42	22.88	118	0.568
% Hispanic	9.52	42	7.63	118	0.753
% Asian Non-Hispanic	2.38	42	9.32	118	0.069*
% Female Head of Household	92.68	41	81.58	114	0.041**
% Married Head of Household	9.76	41	11.40	114	0.615
% Less than High School Grad	26.19	42	15.97	119	0.243
% High School Degree	30.95	42	31.93	119	0.987
% Attended Some College	38.10	42	47.06	119	0.303
% BA or more	4.76	42	5.04	119	0.953
% Homeless	19.05	42	11.76	119	0.332
% Currently Working	54.76	42	50.42	119	0.565
% Works Full-Time (Over 35 Hours/Week)	28.57	42	25.21	119	0.573
% Commute > 30 min to Work	26.09	23	40.00	60	0.328
% with Car and Driver's License	52.38	42	66.39	119	0.126
Number of Children	2.10	42	2.22	119	0.533
Children's Average Age	5.24	42	7.13	116	0.003***
B. Neighborhood-Related Questions					
% Starting in High-Opportunity Tract	12.12	33	13.98	93	0.780
% Satisfied with Current Neighborhood	46.15	39	51.35	111	0.647
% Would Leave Neighborhood if Got Voucher	56.41	39	51.35	111	0.662
% Feel They Could Find Place in New Neighborhood	62.50	40	55.14	107	0.458
% Could Pay for a Move	33.33	42	27.73	119	0.599
% Good with Moving to Racially Diff Neighborhood	83.33	42	71.19	118	0.052*
% Good with Moving to Specific Neighborhood in Opportunity Area	66.67	42	67.23	119	0.967
% Considering Different School for Any Child	70.00	30	56.25	96	0.169
% Unsatisfied with Any Child's Current School	20.00	30	18.75	96	0.888
% Primary Motivation Schools	35.71	42	40.34	119	0.603
% Primary Motivation Safety	16.67	42	20.17	119	0.541
% Primary Motivation Bigger/Better Home	19.05	42	20.17	119	0.897
C. Characteristics of Origin Neighborhood (Census Tract)					
Predicted Mean Household Income Rank (p=25)	44.50	41	43.92	117	0.425
Incarceration Rate (p=25)	1.92	41	2.16	117	0.320
Teen Birth Rate (Women; p=25)	21.34	41	22.81	117	0.337
% in Poverty (2016 ACS)	15.75	41	17.53	117	0.302
% Black (ACS 2013-2017)	11.37	41	11.94	117	0.722
% Low-Inc. 3rd Graders Proficient in Math (2015)	41.99	39	40.96	114	0.624
% in Extreme Poverty Tract (2016 ACS)	4.88	41	0.85	117	0.269

F-Tests	F-Statistic	P-Value	N
Unconditional on Lease-up	0.854	0.708	161
Conditional on Lease-up	0.739	0.850	130

Notes: This table replicates the summary statistics in Table 1, but restricts the sample to families who participated in the qualitative survey defined in Appendix Table 3. In addition to the F-Statistic of joint significance using all families who participated in the qualitative study, we show a second F-Statisctic restricting the sample to households who leased-up and were interviewed after lease-up if they participated in the qualitative study. All regressions use robust standard errors. See Table 1 for further details.   *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 5
Calculation of Lifetime Earnings Impact of CMTO

(1) Average Upward Mobility (in ranks) in control group destinations	44.53
(2) [Translated to 2015 USD]	$35,955
(3) Treatment effect (TOT) on Tract-Level Upward Mobility (in ranks)	4.25
(4) Estimated causal effect of move from birth [= 62% of (3)]	2.64
(5) Expected Upward Mobility (in ranks) for treated [= (1) + (4)]	47.17
(6) [Translated to 2015 USD]	$38,955
(7) Causal effect of CMTO on yearly income at age 34 (2015 USD) [= (6) - (2)]	$3,001
(8) Avg family income at age 34 (2015 USD, from ACS)	$64,160
(9) Undiscounted income over the lifecycle from ACS, assuming 1% income growth (2015 USD)	$4,585,149
(10) Impact as % of avg family income in ACS [= (7) / (8)]	4.68%
(11) Causal treatment effect on undiscounted lifetime income (USD) [= (10) * (9)]	$214,436
(12) Avg undiscounted income over the lifecycle for low-income children in Seattle area (2015 USD)	$2,539,340
(13) Impact as % of avg low-income lifetime earnings in Seattle area [= (11) / (12)]	8.44%
(14) Discounted income over the lifecycle from ACS, 1% income growth (2015 USD)	$1,825,930
(15) Causal treatment effect on discounted lifetime income (USD) [= (10) * (14)]	$85,394

Notes: This table outlines the steps we use to translate our estimated treatment effects into lifetime earnings effects for the children whose families moved to high-opportunity neighborhoods as a result of CMTO. We estimate the impact on incomes for a child that moved to a high-opportunity neighborhood at birth. Row (1) presents the average level of upward mobility in the destination tracts to which families in the control group moved using data from the Opportunity Atlas (i.e. the family income rank at age 34 of children in the 1978-83 birth cohorts, based on their childhood neighborhood, for families at the 25th percentile of the parental income distribution). Row (2) translates this level into 2015 USD by mapping this percentile to dollars using the national income distribution for 31-37 year olds in 2014-2015. Row (3) presents the treatment effect of CMTO on upward mobility for those who moved to an opportunity neighborhood (TOT). Row (4) multiplies this effect by 62%, based on the estimate from Chetty et al. (2018) that children who move at birth to a neighborhood with 1 rank higher upward mobility grow up to have an income rank that is 0.62 units higher. Row (5) presents the sum of this effect and the control group mean. Row (6) translates this into 2015 USD using the same approach as in Row (2). Row (7) computes the difference in expected income levels between the treated and untreated groups. Row (8) reports the mean family income (individual income plus spousal income for married couples, to match our measure of family income in the Opportunity Atlas) from the 2015 ACS at age 34. Row (9) presents the undiscounted sum of mean family income in the 2015 ACS, summing across all ages and assuming 1% wage growth from birth. Row (10) computes the percentage impact on incomes by dividing (7) by (8). Row (11) computes the impact on lifetime undiscounted income assuming the percentage impact on income over the life cycle is constant. Row (12) reports an estimate of the undiscounted mean family income over the lifecycle for children born to parents in the 25th percentile of the national income distribution who grew up in a low-opportunity area in Seattle and King County. We estimate this value by mutiplying the mean income for children growing up in low-income (25th percentile) families in low-opportunity areas in Seattle and King County by row (9) divided by row (8). Row (13) reports the earnings gain from moving to a high-opportunity area as a percentage of mean income for children growing up in low-income families in low-opportunity areas in Seattle and King County by dividing (11) by (12). Rows (14) and (15) compute the impact on discounted lifetime income. Row (14) reports mean lifetime income in the ACS discounted over the life cycle at 2%, assuming 1% income growth from birth. Row (15) reports the impact on discounted lifetime income, again assuming the percentage impact over the life cycle is constant.

Heterogeneity of Treatment Effects on Lease-up Rates

	Lease-up Rates (%)					
	Control Mean	Treatment Mean	Treatment Effect	SE	N	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)

A. Pooled and by Housing Authority

All Families	85.9	87.3	1.5	3.3	427	0.662
All Families (Controls)	85.9	87.0	1.1	3.4	427	0.739
Seattle Housing Authority	85.1	86.0	0.9	5.0	201	0.864
King County Housing Authority	86.5	88.5	2.0	4.4	226	0.655

B. By Head of Household Demographic Characteristics

Black Non-Hispanic	87.1	90.3	3.2	4.5	208	0.479
White Non-Hispanic	84.8	85.4	0.6	7.0	103	0.927
Other Race/Ethnicity	85.7	84.2	-1.6	6.9	111	0.823
Born Outside the U.S.	85.9	89.2	3.3	5.4	150	0.538
Born in the U.S.	85.7	87.0	1.3	4.2	276	0.758
English Isn't Primary Language	87.2	92.9	5.8	6.9	80	0.403
English Is Primary Language	85.5	86.0	0.6	3.8	346	0.876
20 years or more in Seattle/King County	88.4	86.3	-2.0	4.9	183	0.678
Less than 20 years in Seattle/King County	83.9	88.0	4.1	4.5	243	0.363
Started in High Opportunity Tract	95.0	95.5	0.5	6.8	42	0.946
Didn't Start in High Opportunity Tract	85.9	86.1	0.2	4.1	293	0.969
Income ≤ $19,000 (sample median)	85.1	86.0	0.8	4.8	219	0.865
Income > $19,000 (sample median)	87.4	89.3	1.9	4.5	207	0.664
No College	85.4	87.5	2.1	4.6	226	0.651
Some College or More	86.1	86.9	0.8	4.9	197	0.874
Currently Working	87.9	87.2	-0.7	4.3	242	0.864
Currently Not Working	82.5	87.5	5.0	5.4	184	0.354
Uses Child Care	86.1	85.2	-0.9	4.9	211	0.853
Doesn't Use Childcare	85.4	88.2	2.8	4.7	215	0.555

C. By Perceptions About Moving at Baseline

Feels Good About Moving to an Opportunity Area	86.5	91.1	4.6	3.6	306	0.197
Doesn't Feel Good About Moving to an Opportunity Area	83.9	78.2	-5.7	7.2	120	0.426
Satisfied With Current Neighborhood	85.9	87.5	1.6	4.8	203	0.739
Unsatisfied/Indifferent With Current Neighborhood	87.9	86.7	-1.2	4.9	195	0.807
Sure Wants to Leave Current Neighborhood	88.0	87.5	-0.4	4.6	211	0.927
Sure Wants to Stay in Current Neighborhood or Indifferent	86.6	86.2	-0.3	5.0	186	0.944
Feels Good About Moving to Racially Different Neighborhood	87.6	87.1	-0.4	3.7	333	0.907
Feels Bad/Indifferent About Moving to Racially Different Neighborhood	76.5	87.5	11.0	8.7	91	0.205
Sure Could Pay for Moving Expenses	82.1	85.8	3.8	6.7	123	0.577
Not Sure Could Pay for a Moving Expenses	87.6	87.9	0.3	3.8	303	0.935
Sure Could Find a New Place	85.6	89.2	3.7	4.6	207	0.425
Not Sure Could Find a New Place	87.2	86.3	-0.9	5.2	173	0.866

D. By Children's Characteristics

Mean Children Age at or Above Median (6.3 years)	81.8	86.0	4.2	5.1	207	0.410
Mean Children Age Below Median (6.3 years)	89.8	88.0	-1.7	4.5	207	0.697
More than 2 Children	88.1	84.8	-3.3	6.0	137	0.587
2 Children or Less	84.8	88.9	4.1	4.1	290	0.311
Considering Different Schools	83.2	84.6	1.4	5.4	192	0.792
Not Considering Different Schools	86.9	84.9	-2.0	5.9	137	0.741

Notes: This table replicates Table 2 using an indicator for leasing up anywhere using one's voucher as the outcome instead of leasing up in a high-opportunity area. See Table 2 for details. *** p<0.01, ** p<0.05, * p<0.1

	Control Mean	Control Standard Deviation	Treatment Mean	Treatment Effect	Standard Error of Treatment Effect	Treatment Effect in Standard Deviations	Standard Error of Treatment Effect in Standard Deviations
A. Neighborhood Characteristics	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Distance							
Mean Commute Time in 2000 (Minutes)	29.65	3.33	28.35	-1.30***	0.32	-0.39	0.10
% Commute < 15 Mins	16.26	7.64	17.46	1.20**	0.61	0.21	0.10
Distance to City Hall of Largest City in CZ (Miles)	11.69	7.64	10.70	-0.99*	0.55	-0.13	0.07
Resident Demographics							
% White (2017)	49.18	18.70	56.23	7.06***	1.70	0.38	0.09
% Black (2017)	11.39	9.21	8.21	-3.18***	0.79	-0.35	0.09
% Hispanic (2017)	13.44	8.87	10.63	-2.81***	0.77	-0.32	0.09
% Foreign-Born (2016)	24.84	10.39	24.43	-0.40	0.97	-0.04	0.09
% Married (2010)	46.36	9.71	49.19	2.83***	0.95	0.29	0.10
% of Children with Single Parents (2013-2017)	33.21	12.79	29.52	-3.69***	1.31	-0.29	0.10
% >= College Education (2017)	36.67	17.39	46.38	9.71***	1.75	0.56	0.10
Population Density (2010, # People per Square Mile)	2,492.26	1,296.74	2,377.04	-115.23	125.50	-0.09	0.10
Tract Income and Other Characteristics							
Median HH Income (2017)	67,347	22,229	79,956	12608.81***	2,661	0.57	0.12
% Labor Force Participation (2010)	0.70	0.06	0.70	-0.00	0.01	-0.05	0.10
% Poverty (2017)	14.68	8.09	13.27	-1.41*	0.79	-0.17	0.10
Median Home Value (2010)	342,214	103,733	403,067	60853.20***	12,279	0.59	0.12
Census Mail Response Rate	76.37	4.47	77.34	0.97**	0.44	0.22	0.10
Theil Index of Racial Segregation	0.12	0.05	0.12	-0.01*	0.00	-0.15	0.09
# Jobs For No HS Degree, 1 Mile Radius	161.54	380.86	186.94	25.40	34.06	0.07	0.09
Children's Long-Term Outcomes							
Predicted Mean Individual Income Rank (p=25)	46.47	3.02	47.75	1.28***	0.33	0.42	0.11
Predicted Mean Household Income Rank (p=25)	44.53	3.58	46.14	1.61***	0.39	0.45	0.11
Predicted Mean Household Income Rank for White Children (p=25)	46.97	4.43	47.81	0.84*	0.49	0.19	0.11
Teenage Birth Rate for Women (p=25)	21.10	7.86	16.55	-4.55***	0.79	-0.58	0.10
Incarceration Rate (p=25)	2.04	1.30	1.61	-0.43***	0.13	-0.33	0.10
Other Indices of Opportunity							
Kirwan Overall Child Opportunity Score	-0.12	0.38	0.10	0.22***	0.04	0.58	0.10
Kirwan Educational Subscore	-0.24	0.57	0.11	0.35***	0.06	0.62	0.11
Kirwan Health/Environment Subscore	0.00	0.32	0.10	0.10***	0.03	0.31	0.09
Kirwan Social/Economic Opportunity Subscore	-0.14	0.55	0.08	0.21***	0.05	0.39	0.10
HUD Transit Index	82.11	9.29	81.91	-0.20	0.80	-0.02	0.09
Environmental Health Index	10.27	14.28	11.12	0.85	1.36	0.06	0.10
B. Unit Characteristics							
Square Feet	1,257.17	651.88	1,298.99	41.82	80.75	0.06	0.12
Year Built	1,985.18	22.71	1,980.99	-4.19	3.17	-0.18	0.14
Household Appliance Index	0.63	0.36	0.63	0.00	0.03	0.00	0.09
Baths	1.97	0.71	2.04	0.07	0.09	0.10	0.13
Share With Air Conditioning	9.38	29.30	7.38	-2.00	3.04	-0.07	0.10
Total Rent Paid to Owner	1,824.57	544.35	2,012.86	188.29***	56.66	0.35	0.10
Rent Paid by PHA	1,422.34	612.58	1,658.22	235.87***	60.33	0.39	0.10
Utilities Paid (estimate by PHAs)	138.66	89.24	170.42	31.76***	8.57	0.36	0.10
Total Out of Pocket Expenditures (Tenant)	489.70	371.12	472.37	-17.33	55.67	-0.05	0.15

Notes: This table shows the effect of the CMTO treatment on a variety of neighborhood and unit characteristics. Each row of the table reports the mean and standard deviation of the relevant outcome in the treatment and control groups as well as an estimate from a separate OLS regression of neighborhood and housing unit characteristics on an indicator for treatment status. All regressions include a PHA indicator and use robust standard errors. The control group mean is a raw mean while the treatment group mean is constructed as the control mean plus the treatment effect estimate. Panel A shows treatment effects on neighborhood characteristics unconditional on lease-up. Panel B shows treatment effects on unit characteristics for the subsample who leased up because these characteristics are only available for those who leased up. The Household Appliance Index is the sum of six indicators for common appliances observed in the rental listings: microwaves; refrigerators; washers; dryers; dishwashers; and garbage disposal. For the distance moved variable, distances were computed using tract centroids, so households who move to the same tract as their origin tract are indicated as having moved 0 miles. Distance moved was topcoded at 50 miles, and households that did not lease up were coded as having moved 0 miles. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Neighborhood Characteristics of High vs. Low Opportunity Areas

	All Tracts (1)	Non-High-Opportunity Tracts (2)	High-Opportunity Tracts (3)	High-Opportunity Tracts Moved Into By CMTO Participants (4)	Z-Score for (4)-(3) (5)
			Tract Means, Weighted by Num. of Children in Below Median Income Families		
Distance					
Mean Commute Time in 2000 (Minutes)	29.01	29.62	26.86	27.08	0.05
% Commute < 15 Mins	17.47	17.14	18.65	18.12	-0.08
Distance to City Hall of Largest City in CZ (Miles)	11.84	12.21	10.51	9.53	-0.14
Resident Demographics					
% White (2017)	53.81	51.16	63.17	63.01	-0.01
% Black (2017)	9.11	10.74	3.35	4.48	0.13
% Hispanic (2017)	12.78	14.36	7.20	7.28	0.01
% Foreign-Born (2016)	24.19	23.99	24.90	23.82	-0.09
% Married (2010)	50.24	48.29	57.14	53.48	-0.34
% of Children with Single Parents (2013-2017)	29.61	32.60	19.05	22.57	0.25
% >= College Education (2017)	39.33	34.21	57.46	58.80	0.07
Population Density (2010, # People per Square Mile)	2174.42	2255.41	1887.98	2081.69	0.12
Tract Income and Other Characteristics					
Median HH Income (2017)	75,986.53	68,269.98	103,276.59	98,259.67	-0.17
% Labor Force Participation (2010)	69.80	69.82	69.76	70.35	0.10
% Poverty (2017)	13.00	14.32	8.35	9.97	0.19
Median Home Value (2010)	366,668.91	334,382.78	481,908.56	479,475.22	-0.02
Census Mail Response Rate	77.29	76.57	79.84	78.47	-0.25
Theil Index of Racial Segregation	0.13	0.14	0.12	0.11	-0.20
# Jobs For No HS Degree, 1 Mile Radius	189.62	199.07	156.21	170.26	0.04
Children's Long-Term Outcomes					
Predicted Mean Individual Income Rank (p=25)	46.73	45.70	50.37	49.74	-0.16
Predicted Mean Household Income Rank (p=25)	45.50	44.16	50.27	48.54	-0.37
Teenage Birth Rate for Women (p=25)	19.67	22.06	11.25	10.79	-0.06
Incarceration Rate (p=25)	1.92	2.11	1.28	1.20	-0.05
Other Indices of Opportunity					
Kirwan Child Opportunity Index - Overall Score	-0.04	-0.15	0.34	0.37	0.06
Kirwan Child Opportunity Index - Educational Subscore	-0.13	-0.31	0.51	0.54	0.04
Kirwan Child Opportunity Index - Health/Environment Subscore	0.05	0.02	0.16	0.20	0.16
Kirwan Child Opportunity Index - Social/Economic Subscore	-0.05	-0.17	0.35	0.36	0.02
HUD Transit Index	79.56	79.72	78.99	81.00	0.18
Environmental Health Index	13.22	12.50	15.53	14.21	-0.07

Notes: This table shows neighborhood characteristics for different groups of Census tracts. The first three columns show means (weighted by the number of people in the 2000 Decennial Census with below median income) for all tracts, low-opportunity tracts, and high-opportunity tracts, respectively. The fourth column shows means for high-opportunity tracts to which CMTO participants moved, weighted by the number of CMTO participants who moved to each tract. The final column shows the Z-score of the difference between the weighted average for all high opportunity tracts and the weighted average of high opportunity tracts to which CMTO families moved. Data on commute times come from the 2000 Decennial Census (mean commute time) and from the 2012-2016 ACS (% commute time < 15 min), resident demographics and tract income from the ACS; children's long-term outcomes from the Opportunity Atlas; and other indices of opportunity from The Kirwan Child Opportunity Index constructed by The Kirwan Institute for the Study of Race and Ethnicity and from HUD's Affirmatively Furthering Fair Housing Data and Mapping Tool (AFFH-T).

Intervention Dosage: Treated Households' Usage of CMTO Services

	Pooled		Moved to Non-High-Opportunity Tract		Moved to High Opportunity Tract	
	N (1)	Mean (2)	N (3)	Mean (4)	N (5)	Mean (6)
A. Usage of Search Assistance Services						
Total hours in contact with non-profit or PHA staff	222	5.98	76	4.46	118	7.05
Hours in contact non-profit or PHA staff per month	222	1.35	76	1.04	118	1.70
Percent that received search assistance	222	97.75	76	96.05	118	98.31
Percent that received rental application coaching	222	91.44	76	86.84	118	94.92
Percent that did a neighborhood tour	222	17.57	76	11.84	118	22.88
Percent that visited locations with non-profit staff	222	21.17	76	11.84	118	29.66
B. Linkage to Units and Landlords						
Percent linked to a unit through the MIS system	222	45.95	76	7.89	118	79.66
Percent linked to a unit of a landlord contacted by non-profit staff	222	27.48	76	5.26	118	46.61
C. Financial Assistance						
Percent that received any financial assistance (%)	222	65.32	76	28.95	118	96.61
Total amount of assistance among families that received financial assistance ($)	141	1642	21	252	113	1983
Percent that received screening fee assistance (%)	222	57.21	76	26.32	118	84.75
Amount of screening fee assistance among families that received screening fee assistance ($)	126	80	20	65	99	81
Percent that received deposit assistance (%)	222	51.80	76	3.95	118	93.22
Amount of deposit assistance among families that received deposit assistance ($)	112	1608	1	2200	110	1613

D. Correlations Between Usage of CMTO Services Among Families who Moved to High-Opportunity Areas

	Time Meeting with CMTO Staff	Financial Assistance	Unit Found Through Housing Locator
Time Meeting with CMTO Staff	1		
Financial Assistance	0.19	1	
Unit Found Through Housing Locator	0.11	-0.10	1

Notes: This table shows service usage statistics for families in the CMTO treatment group as recorded by the housing authorities and non-profit staff running the CMTO services. In Panel A, time meeting with CMTO staff was estimated based on the lengths of specific interactions, which includes in-person meetings and phone calls. The share of households receiving specific services was derived from contact logs between the non-profit staff and the households. Links to units and landlords come from the MIS platform set up to facilitate interactions between landlords, non-profit staff, and households. Financial assistance includes assistance to defray moving costs, such as screening fees, security deposits, and holding fees. In Columns 1 and 2, we pool all families in the treatment group. In Columns 3 and 4, we restrict the sample to treatment group families who moved to non-high-opportunity tracts. In Columns 5 and 6, we restrict the sample to treatment group families who moved to high-opportunity tracts. Panel D shows Pearson correlations between usage of different CMTO service categories among families in the treatment group who moved to high-opportunity areas.

Appendix Table 10
Baseline Survey Questions and Coding of Variables

	Survey Instrument Reference	Variable Coding Details
A. Baseline Variables		
% Speak English	Q7. Is an interpreter or translation service being used for survey administration?	
% Born Outside the U.S.	Q10. In what country were you born?	
% Less than High School Grad	Q22. What is the highest level of education that you have completed?	= Grade 9 or less OR Grade 10 or grade 11 OR Attended grade 12 but did not receive high school diploma or GED certificate
% High School Degree	Q22. What is the highest level of education that you have completed?	= GED certificate OR High school diploma
% Attended Some College	Q22. What is the highest level of education that you have completed?	= Some college or Associate's or two-year degree
% BA or more	Q22. What is the highest level of education that you have completed?	= Four-year college degree or higher
% Homeless	Q14. Where do you currently live?	= Homeless or in a group shelter
% Currently Working	Q15. Are you currently working for pay?	
% Commute > 30 min to Work	Q17. How long does it take you to get to your job?	= 31 to 45 minutes OR 46 minutes to one hour OR More than one hour
% with Car and Driver's License	Q19. Do you have a valid driver's license? AND Q20. Do you have access to a car that runs?	
% Satisfied with Current Neighborhood	Q32. Which of the following statements best describes how satisfied you are with your current neighborhood?	= Very satisfied OR Somewhat satisfied
% Would Leave Neighborhood if Got Voucher	Q33. Which of the following statements best describes how you feel about staying in your current neighborhood if you receive a voucher?	= Somewhat sure I want to move to a different neighborhood OR Very sure I want to move to a different neighborhood
% Feel They Could Find Place in New Neighborhood	Q47: How sure are you that you could find a home in a new neighborhood in [Seattle/King County]?	= Very sure OR Fairly sure
% Could Pay for a Move	Q50. How sure are you that you will be able to pay for any moving expenses?	= Very sure OR Fairly sure
% Good with moving to Racially Diff Neighborhood	Q43. How would you feel about moving to a neighborhood where almost all of the other residents are of a different race or ethnicity than your own?	= Very good OR Good
% Good with Moving to Specific Neighborhood in Opportunity Area	Q36. If a home or apartment were to be available, how would you feel about moving to ___? Would you feel… AND Q39. How would you feel about moving to ___? AND Q42. How would you feel about moving to neighborhoods ___?	= Very good OR Good [in at least one of the questions]
Number of Children	Remind me how many children do you have?	
Children's Average Age	Q53. What is the child's age?	
% Considering Different School for Any Child	Q58. Are you currently considering transferring him/her to a different school (or Pre-K/Pre-school program)?	= Yes [for at least one child]
% Unsatisfied with Any Child's Current School	Q57. How satisfied are you with his/her current school (or Pre-K/Pre-school program)?	= Somewhat unsatisfied OR Very unsatisfied [for at least one child]
20 years or more in Seattle/King County	Q13. How long have you lived in the Seattle or King County area in your lifetime?	
Uses Child Care	Q27. What types of child care do you use for your child or children? (Check all that apply)	
Feels Good About Moving to an Opportunity Area	see % Good with Moving to Specific Neighborhood in Opportunity Area	
Sure Wants to Leave Current Neighborhood	see % Would Leave Neighborhood if Got Voucher	
Sure Could Find a New Place	see % Feel They Could Find Place in New Neighborhood	
B. Public Housing Authority Data		
% Black / Hispanic / Latino / White	3k. Use code or codes at bottom of page that the family says best indicates each household member's race. Select as many codes as appropriate	
Income < $19,000	19h:The total dollar amounts listed in column 19f.	Note: 19f is income minus exclusions

Notes: This table presents definitions of the variables, which come from the baseline survey and from PHA administrative data (HUD form 50058). The baseline questionnaire can be found here.

FIGURE 1: The Geography and Price of Opportunity in Seattle

A. Upward Mobility by Census Tract in Seattle and King County
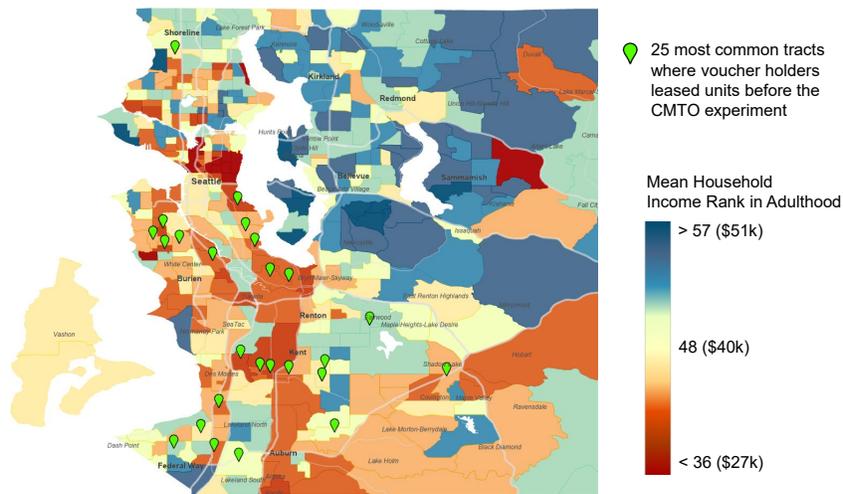
This map must be printed in color to be interpretable

B. Upward Mobility vs. Median Rent, by Tract
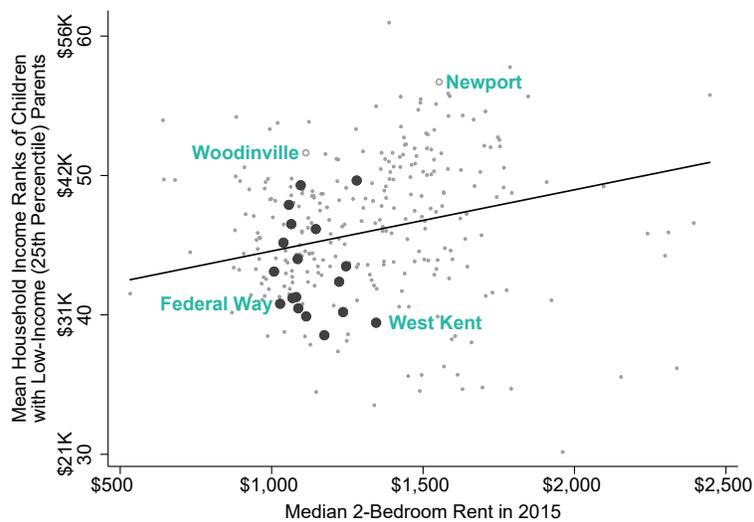
Notes: The map in Panel A shows the Opportunity Atlas estimates of upward mobility, defined as the mean predicted household income rank in 2014-15 for children whose parents were at the 25th percentile of the national household income distribution (an income of $27,000) for children in the 1978-1983 birth cohorts. This measure is estimated separately in each tract as described in Chetty, Friedman, Hendren, Jones, and Porter (2018). To facilitate interpretation of the percentile ranks, we also show the dollar value corresponding to each percentile shown in the legend based on the income distribution of children in the 1978-83 birth cohorts. Green dots show the 25 most common tracts where families with children leased units using a Housing Choice Voucher administered by the King County or Seattle housing authorities in 2015-2017, before the CMTO experiment (based on voucher household shares of the total tract population in 2010). Panel B presents a scatter plot of upward mobility in each tract vs. median rent for two-bedroom, renter-occupied units surveyed in the 2011-2015 American Community Survey. The inner numbers on the vertical axis show the Opportunity Atlas estimates of mean household income ranks depicted in Panel A, while the outer numbers on the vertical axis convert those ranks to 2015 dollars based on the income distribution for children in the 1978-83 birth cohorts. The darker points show 18 of the 25 tracts highlighted in Panel A, which include Federal Way and West Kent (seven of the 25 most common tracts are not shown due to missing rental data). The black best-fit line is estimated using a regression of upward mobility on median rent for two-bedroom homes, weighted by the number of children growing up in households below the 50th percentile of the national income distribution in each tract. Woodinville and Newport, denoted by hollow points, are examples of tracts with rents comparable to Federal Way and West Kent but offer much better prospects for upward mobility for children.

FIGURE 2: Definition of High-Opportunity Neighborhoods

A. CMTO High-Opportunity Neighborhoods
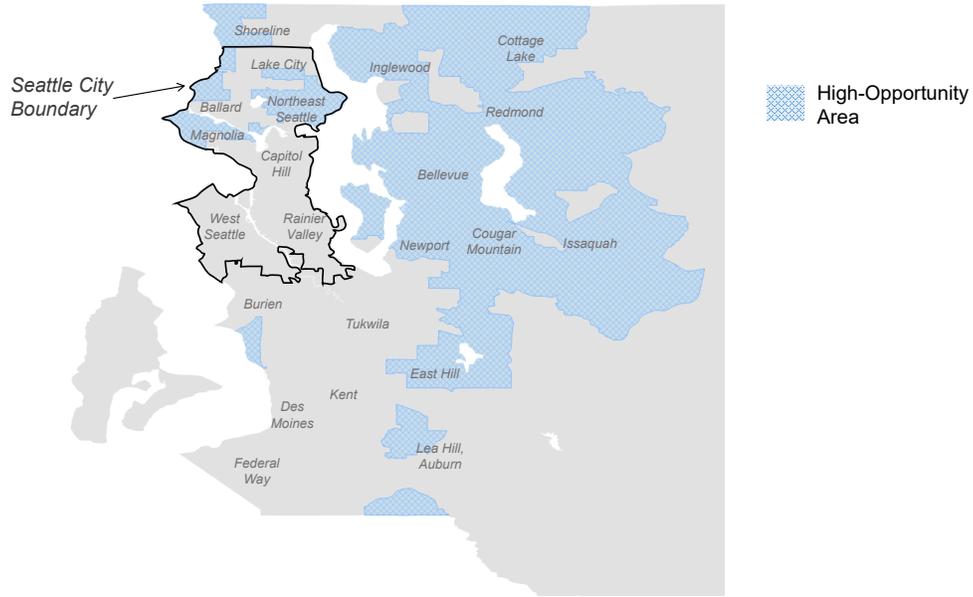
B. Comparing Alternative Measures of Opportunity
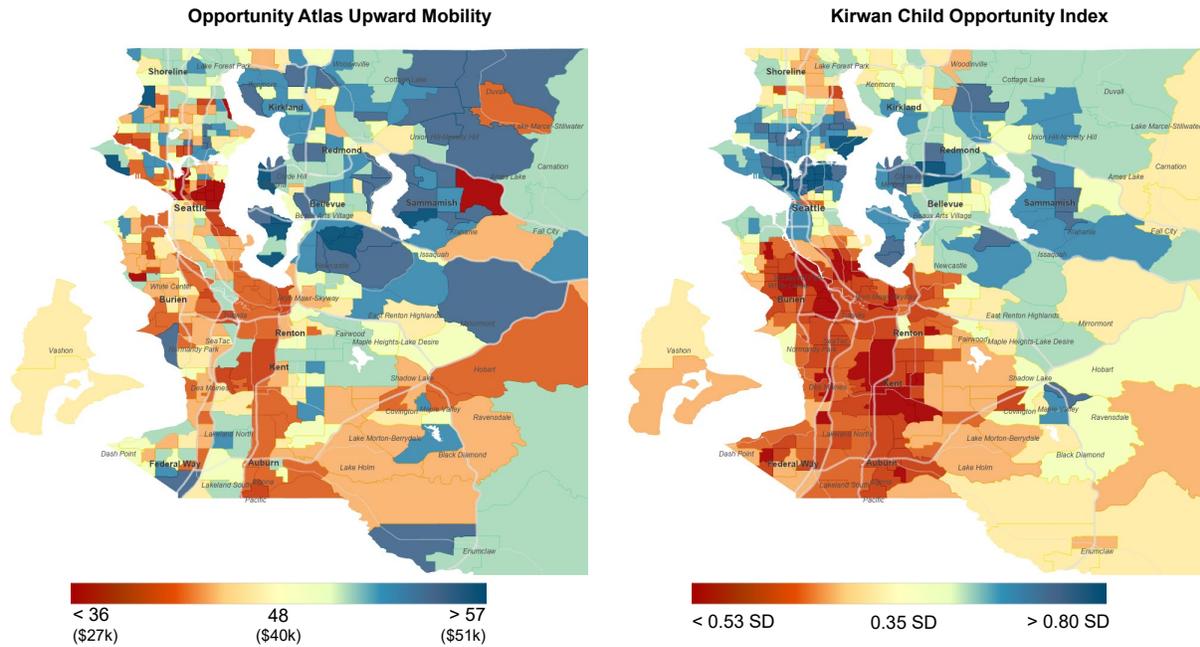
Population-Weighted Correlation Across Tracts: 0.30

These maps must be printed in color to be interpretable

Notes: Panel A shows the tracts designated as high-opportunity areas in the CMTO experiment, which are shown in blue cross-hatch. Panel B compares upward mobility as defined in the Opportunity Atlas (replicating Panel A of Figure 1) to the Kirwan Child Opportunity Index. The Kirwan Child Opportunity Index is constructed by The Kirwan Institute for the Study of Race and Ethnicity and combines 19 components measured between 2007 and 2013 from three subject domains (Educational Opportunity, Health and Environmental Opportunity, and Social and Economic Opportunity), into a single index. The population-weighted correlation between the two measures across tracts in King County is 0.30.

FIGURE 3: CMTO Program Structure

A. Key Elements of the Intervention

CUSTOMIZED SEARCH ASSISTANCE

- **High-opportunity area education** to increase families' knowledge about high-opportunity areas.
- **Rental application coaching** to increase families' competitiveness for rental units by addressing credit history and preparing a narrative.
- **Housing locator services** to help families identify suitable units in high-opportunity areas.

INCREASED LANDLORD ENGAGEMENT

- **Cultivate relationships** with landlords in designated high-opportunity areas to create housing opportunities for CMTO families.
- **Expedite lease-up processes** by completing PHA required documents and conducting housing inspections more quickly.
- **Insurance fund** to mitigate risks of property damage.

SHORT-TERM FINANCIAL ASSISTANCE

- Grants to **defray move-in expenses,** such as application fees and security deposits (on average $1,000).

B. Intervention Process Timeline

Family Contacted
Notified of selection from waitlist

Voucher Issued

Unit Selected
Family approved by landlord for unit

Lease Signed

Intake Appointment
Consent
Randomization
Baseline survey

Nonprofit Staff Meet with Families and Landlords

Rental application coaching
Opportunity area education
Visiting locations

Search assistance
Landlord recruitment
Linking families to units

Lease Up
Receive paperwork and financial assistance (e.g. assistance for deposit)

● PHA ● Nonprofit ● Family Milestone

Notes: Panel A of this figure describes the key components of the CMTO intervention. Panel B presents a stylized timeline of the treatment intervention from the perspective of a family in the treatment group.

FIGURE 4: CMTO Treatment Effects on Neighborhood Choice

A. Fraction Who Lease Units in High-Opportunity Areas

Difference: **37.9 pp**
SE: (4.2)

B. Fraction who Leased Up Before Voucher Expiration

Difference: **1.5 pp**
SE: (3.3)

C. Fraction Who Lease Units in High-Opportunity Areas, Conditional on Leasing Up Somewhere

Difference: **43.1 pp**
SE: (4.6)

D. Upward Mobility in Destination Tract

Difference: **1.6 ranks**
SE: (0.4)
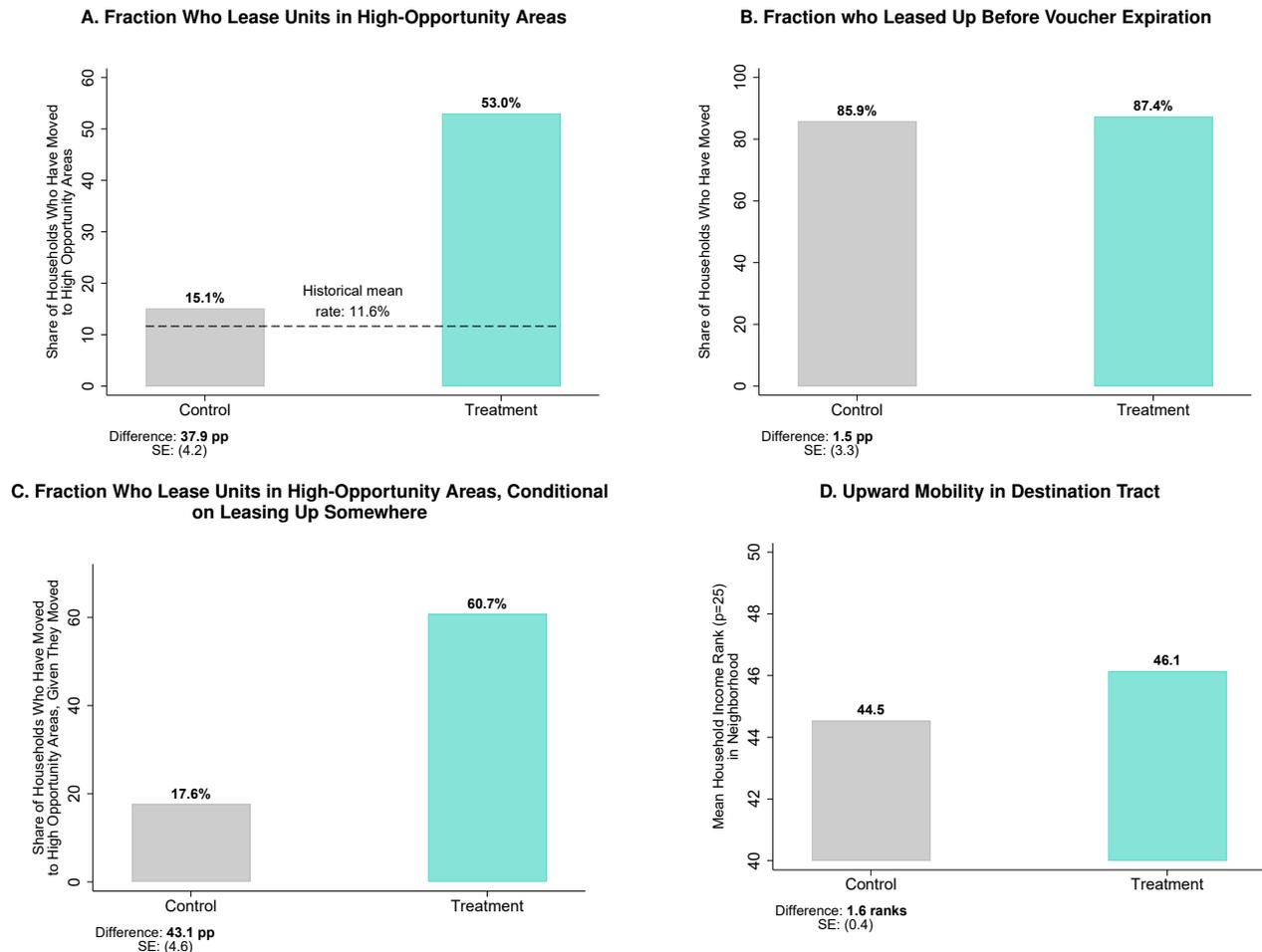
Notes: This figure shows the treatment effects of the CMTO program on families' neighborhood choices. Panel A presents the treatment effect on the fraction who lease up a unit in a high-opportunity tract, as defined in Figure 2. The dashed line in Panel A shows the fraction of voucher recipients who leased units in high-opportunity areas between 2015 and 2017. Panel B presents the treatment effect on leasing up in any area prior to voucher expiration. Panel C presents the treatment effect on leasing up in a high-opportunity area conditional on leasing up somewhere. Panel D presents the treatment effect on upward mobility in the destination, as measured in the Opportunity Atlas, unconditional on lease-up (assigning upward mobility in the origin tract to households who did not lease up). In all panels, the control mean is calculated as the mean within households in the control group. Treatment effects, reported below each panel, are estimated using an OLS regression of the outcome on a treatment indicator and an indicator for being in KCHA/SHA (since randomization occurred within each housing authority). The treatment mean plotted is calculated as the control mean plus the estimated treatment effect. Standard errors reported are robust standard errors. Panels A, B, and D use the full sample, excluding three households whose voucher was transferred to a different public housing authority (other than KCHA/SHA). Panel C further restricts the sample to the 370 households who leased up somewhere using their voucher before it expired. All panels focus on the outcome of the first lease-up after voucher issuance.

FIGURE 5: Map of Destination Tracts for Voucher Recipients
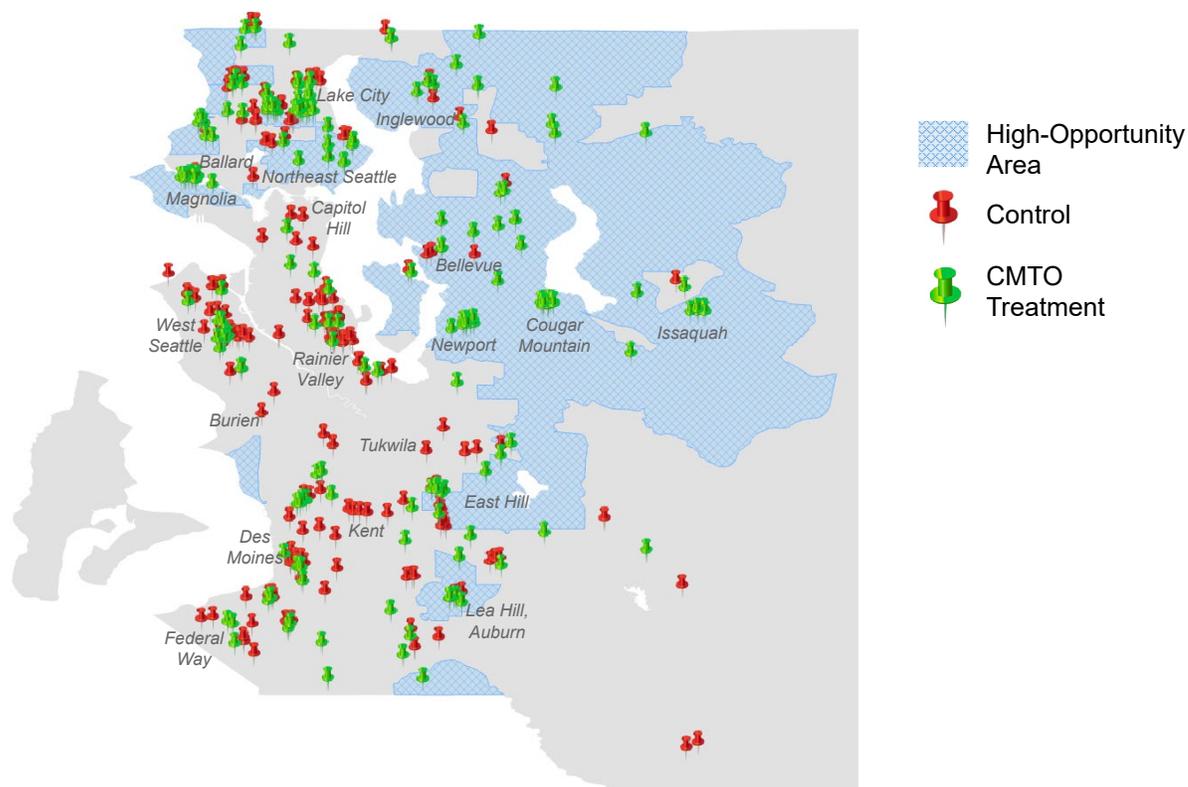
Notes: This figure presents a map of the destination tracts for families in the CMTO treatment and the control groups who moved using their vouchers. High-opportunity areas are highlighted in blue cross-hatch. We focus on the destination tract of the first lease-up after voucher issuance. We exclude 5 households whose vouchers were transferred to different public housing authorities (3 households) or who used their vouchers to lease up units outside of King County (2 households). To protect confidentiality, we add a small amount of random noise to the destination tract centroids shown in the maps.

FIGURE 6: Distribution of Tract-Level Upward Mobility in Destinations Chosen by Treatment vs. Control Group
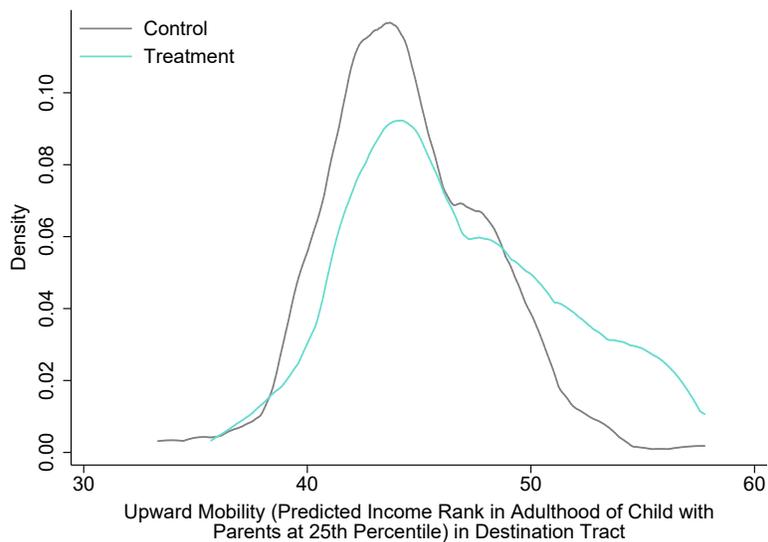
Notes: This figure plots the distribution of upward mobility (based on the Opportunity Atlas estimates shown in Figure 1) in the tracts to which families in the control and CMTO treatment groups move using their vouchers. We focus on upward mobility in the tract of first lease-up after voucher issuance, restricting the sample to households who leased up. Bandwidths for the kernel densities are calculated to minimize integrated square error assuming the data is Gaussian and a Gaussian kernel is used.

FIGURE 7: Heterogeneity in Treatment Effects

A. Treatment Effects by Race and Ethnicity

B. Treatment Effects by Income
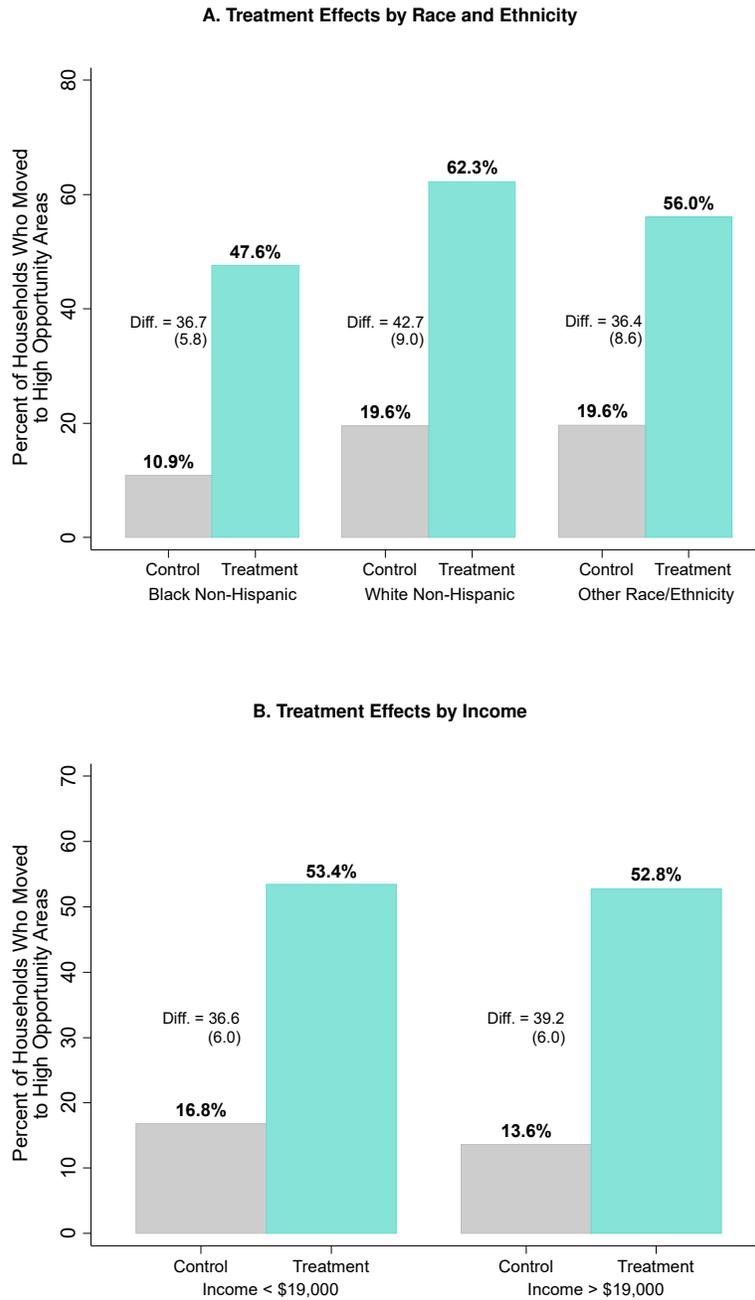
Notes: This figure presents estimates of treatment effects on the share of households moving to high-opportunity areas by race/ethnicity (Panel A) and baseline income level (Panel B) of the voucher recipient. Treatment and control means are estimated separately within each subgroup following exactly the same method used to construct the pooled estimates reported in Panel A of Figure 4; see notes to that figure for further details. Panel A uses the 98% of participants who report their race and Panel B uses the 99% who report their income. The cutoff used in Panel B ($19,000) to divide the two groups corresponds to the median income of the participants in the experiment.

FIGURE 8: Treatment Effects on Neighborhood and Unit Quality

A. Distance Moved

Control: 10.5
Treatment: 11.4

Difference: **0.9 miles**
SE: (1.2)

(y-axis: Mean Distance in Miles Between Origin and Destination Tract Centers)

B. Unit Size

Control: 1257.2
Treatment: 1299.0

Difference: **41.8 sq. feet**
SE: (80.8)

(y-axis: Square Feet of Home)

C. Total Rent Paid to Owner

Control: $1,824.57
Treatment: $2,012.86

Difference: **$188.29**
SE: (56.7)

(y-axis: Monthly Rent ($))
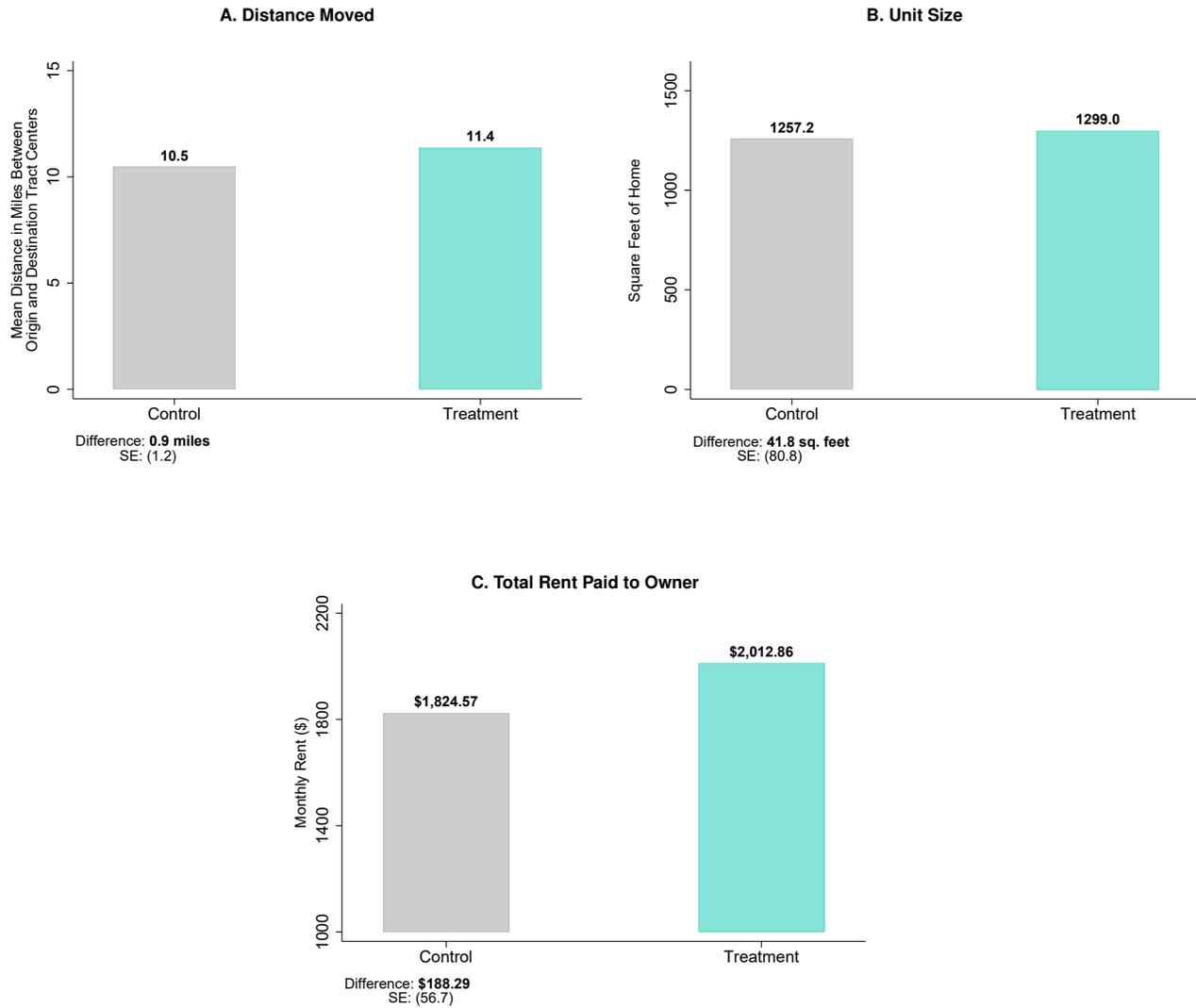
Notes: This figure shows treatment effects on the distance moved, square footage of the unit families lease, and the total rent paid to the property owner for the unit. Distance is calculated as the distance between the centroid of the tract in which the voucher recipient lived at baseline and the centroid of the tract to which they moved. We topcode distance at 50 miles to reduce the influence of outliers. Treatment and control means are estimated among the subsample of households who leased up following exactly the same method used to construct the pooled estimates reported in Panel C of Figure 4; see notes to that figure for further details.

FIGURE 9: Persistence of Treatment Effects on Neighborhood Choice

A. Persistence in High-Opportunity Areas

B. Persistence in Unit
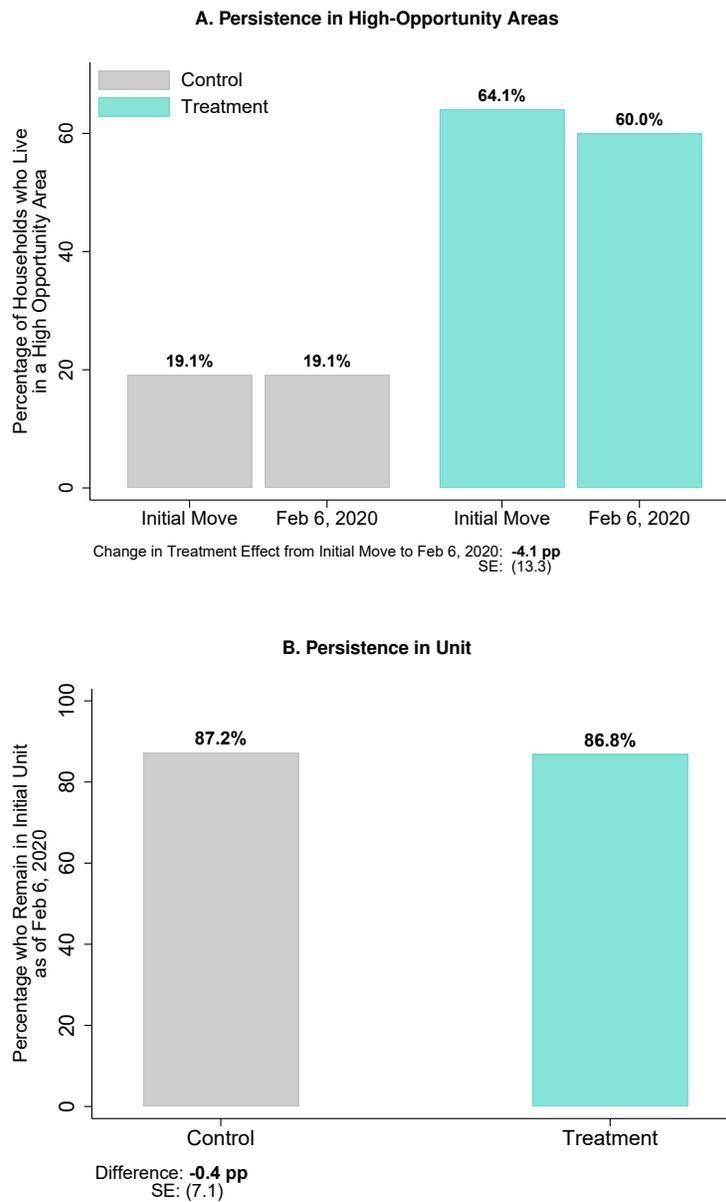
Notes: This figure evaluates whether families who moved to high-opportunity neighborhoods stay there when their lease comes up for renewal. We focus on the subset of families who were issued a voucher before September 1, 2018 and who leased up before January 7, 2019. Panel A plots the fraction of families within this sample who initially leased a unit in a high-opportunity area alongside the fraction who live in a high-opportunity area as of February 6, 2020. Treatment and control means are estimated among the subsample of households who leased up following exactly the same method used to construct the pooled estimates reported in Panel C of Figure 4; see notes to that figure for further details. Panel B shows the fraction of households who live in exactly the same unit in which they originally leased up as of February 6, 2020. In both panels, we exclude 4 households whose location we cannot track as of February 6, 2020 because their voucher was transferred to another public housing authority or because they ended their participation in the voucher program entirely.

FIGURE 10: Treatment Effects on Post-Move Neighborhood Satisfaction

A. Satisfaction with New Neighborhood

B. Certainty About Wanting to Stay in New Neighborhood

Notes: This figure shows treatment effects using data from a follow-up qualitative survey administered to a random sample of CMTO participants. Panel A shows treatment effects on measures of neighborhood satisfaction. Participants were asked, "Which of the following statements best describes how satisfied you are with your current neighborhood? 1. Very Satisfied - 2. Somewhat satisfied - 3. In the middle - 4. Somewhat dissatisfied - 5. Very dissatisfied - 6. (No Answer)." Panel B presents measures of the certainty with which participants want to stay in their new neighborhood. Participants were asked, "Which of the following statements best describes how you feel about staying in your current neighborhood? - 1. Very sure I want to stay - 2. Somewhat sure I want to stay - 3. In the middle - 4. Somewhat sure I want to move to a different neighborhood - 5. Very sure I want to move to a different neighborhood - 6. (No Answer)." The outcomes in each panel are the fraction of respondents who give an answer of "1" to the relevant question. Treatment and control means are estimated among the subsample of households who leased up and were surveyed post-lease-up, following exactly the same method used to construct the pooled estimates reported in Panel C of Figure 4; see notes to that figure for further details. For the full distribution of responses to these two questions, see Appendix Figure 6.

FIGURE 11: Neighborhood Satisfaction in Low vs. High-Opportunity Areas
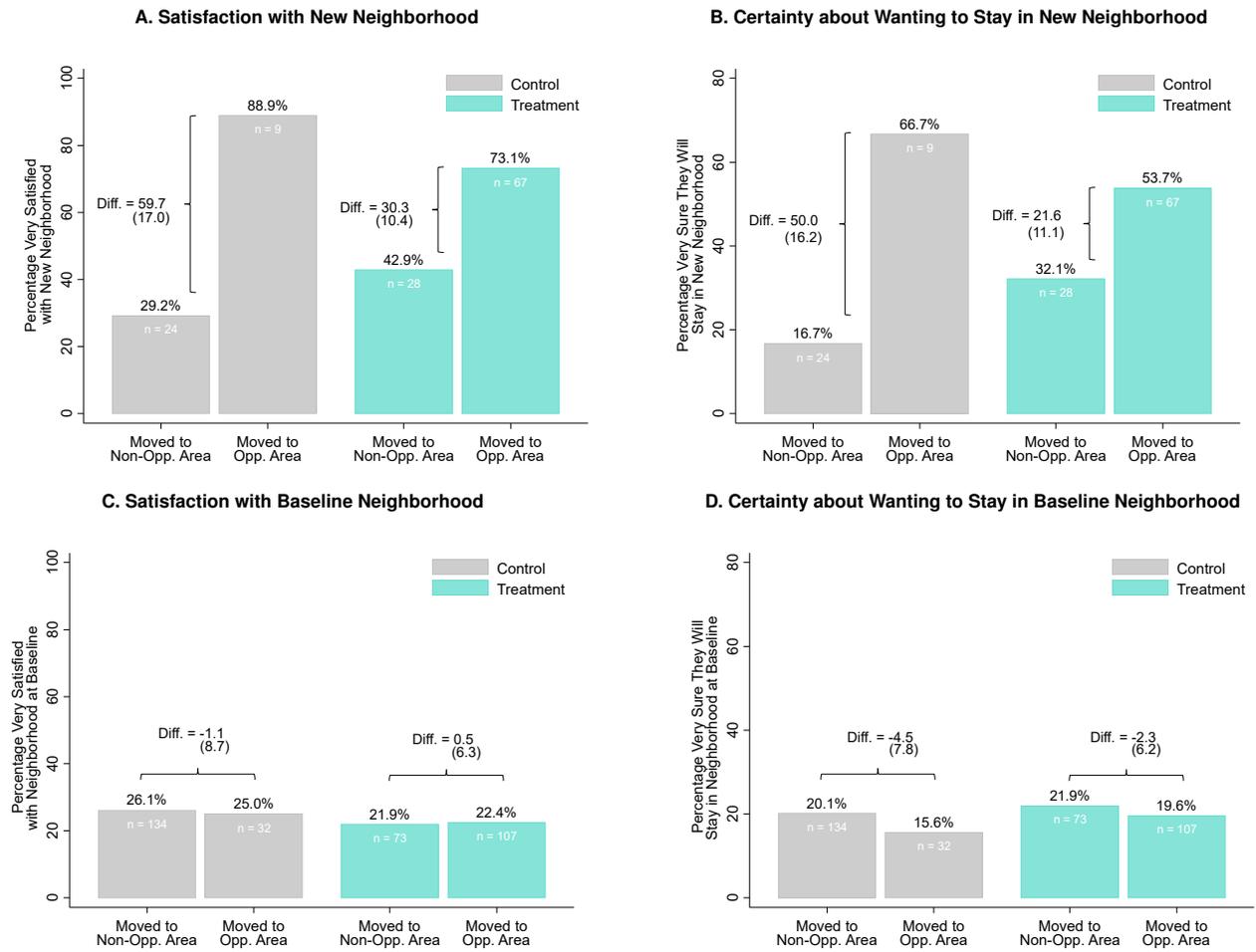
Notes: Panels A and B of this figure present the same measures of neighborhood satisfaction and certainty about wanting to stay as in Figure 10, further disaggregating treatment and control group differences by whether families moved to high-opportunity areas or not. We construct these figures by plotting raw shares for each group: control group households that moved to an area not designated as high-opportunity, control group households that moved to a high-opportunity area, treatment group households who moved to an area not designated as high-opportunity, and treatment group households that moved to a high-opportunity area. The differences in the outcomes between households who moved to high-opportunity areas vs. those who did not are estimated by running separate regressions by treatment group on an indicator for having moved to a high-opportunity area. Panels C and D replicate Panels A and B, but use data from responses to the same questions asked in the baseline survey with reference to the neighborhoods where families were living at the point of voucher application (in contrast with Panels A and B, which use responses given after lease-up using their voucher).

FIGURE 12: Distribution of Preferences for High-Opportunity Neighborhoods Implied by Frictionless Model
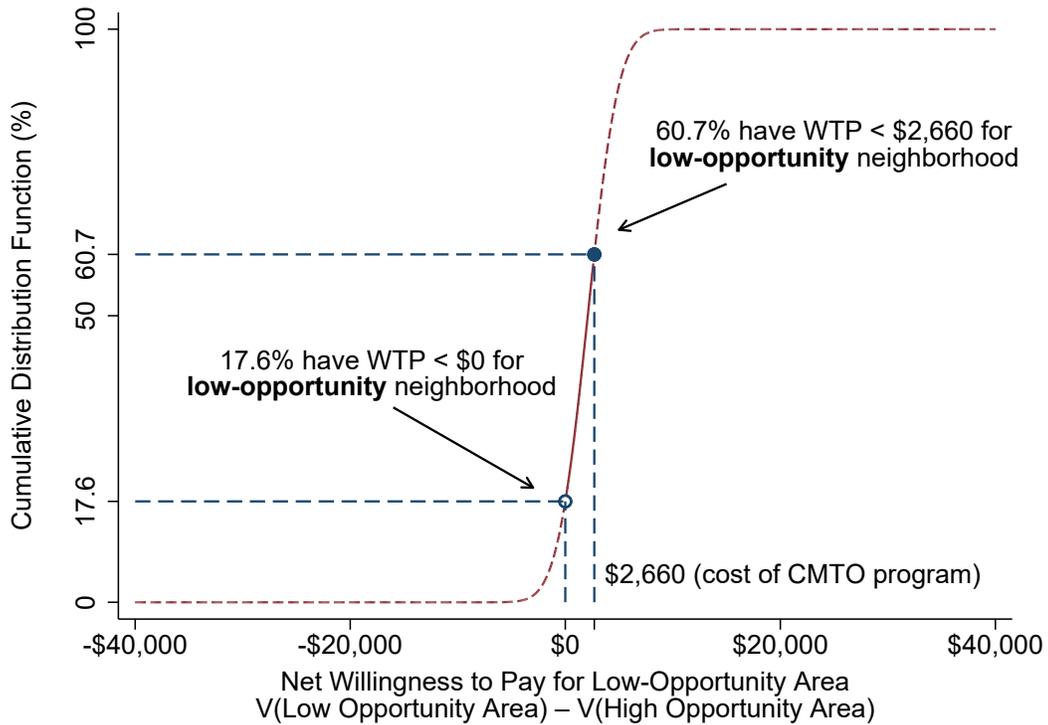
Notes: This figure illustrates what we can learn about families' net willingness to pay to live in low- vs. high-opportunity neighborhoods under the assumptions of a frictionless model of neighborhood choice in which CMTO services are valued at their production cost (see Online Appendix D). The open circle represents the share of families in the control group who chose to lease up in high-opportunity neighborhoods, i.e. the fraction of families who have a negative net willingness to pay to live in low-opportunity neighborhoods. The closed circle represents the share of families in the treatment group who chose to lease up in high-opportunity neighborhoods, i.e. the fraction of families who have a net willingness to pay to live in low-opportunity neighborhoods below $2,660, the cost of the CMTO services they were offered. Any distribution of preferences must pass through these two points – i.e., it must be that 43.1% of households have a WTP between $0 and $2,660 – in order to match the behavior observed in the CMTO experiment under a frictionless model of neighborhood choice. The red curve shows one such distribution.

FIGURE 13: Effects of Voucher Payment Standards on Moving to Opportunity: Quasi-Experimental Estimates
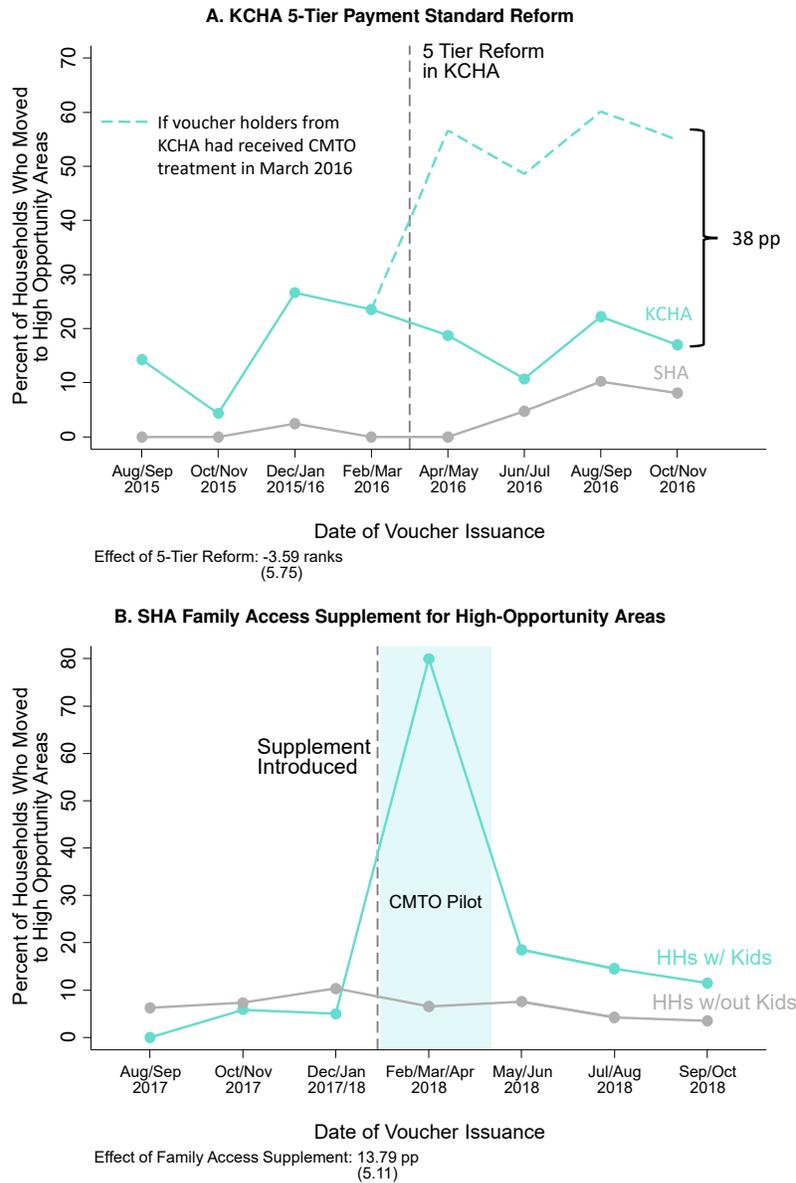
Notes: This figure plots the share of households who move to high-opportunity areas around the introduction of two payment standard reforms, in two-month units. In Panel A, we analyze the introduction of a 5-Tier Voucher Payment Standard system in March 2016 by the King County Housing Authority, which increased payment standards in more expensive neighborhoods. We plot the fraction of voucher recipients with children who choose to lease up in high-opportunity areas (as defined in the CMTO experiment in Figure 2) in both KCHA and SHA around this reform. We also report a difference-in-difference estimate of the treatment effect, estimated using the specification in Section VII.A. As a benchmark, we show the effect of the CMTO intervention on the same scale using the dashed line in the figure. This line is constructed by adding the treatment effect of CMTO on moving to high-opportunity areas shown in Figure 4a to the grey series after March 2016. In Panel B, we analyze the introduction of the Family Access Supplement (FAS) in SHA in February 2018, which increased payment standards in high-opportunity areas as defined exactly in the CMTO experiment. The FAS was implemented at the same time as the start of the CMTO pilot, which was conducted from Februrary-April 2018, shown by the shaded region in the figure, and continued after the pilot ended. The FAS was only available to families with children; we therefore use families without children within SHA as a comparison group to evaluate the impacts of this reform. We again plot the fraction of voucher recipients in each group who choose to lease up in high-opportunity areas around this reform and report a difference-in-difference estimate of the reform's impact (excluding the CMTO pilot period) using the specification in Section VII.A.

APPENDIX FIGURE 1: Causal Effects of Moving to a Better Neighborhood by Age at Move:
Evidence from Prior Research
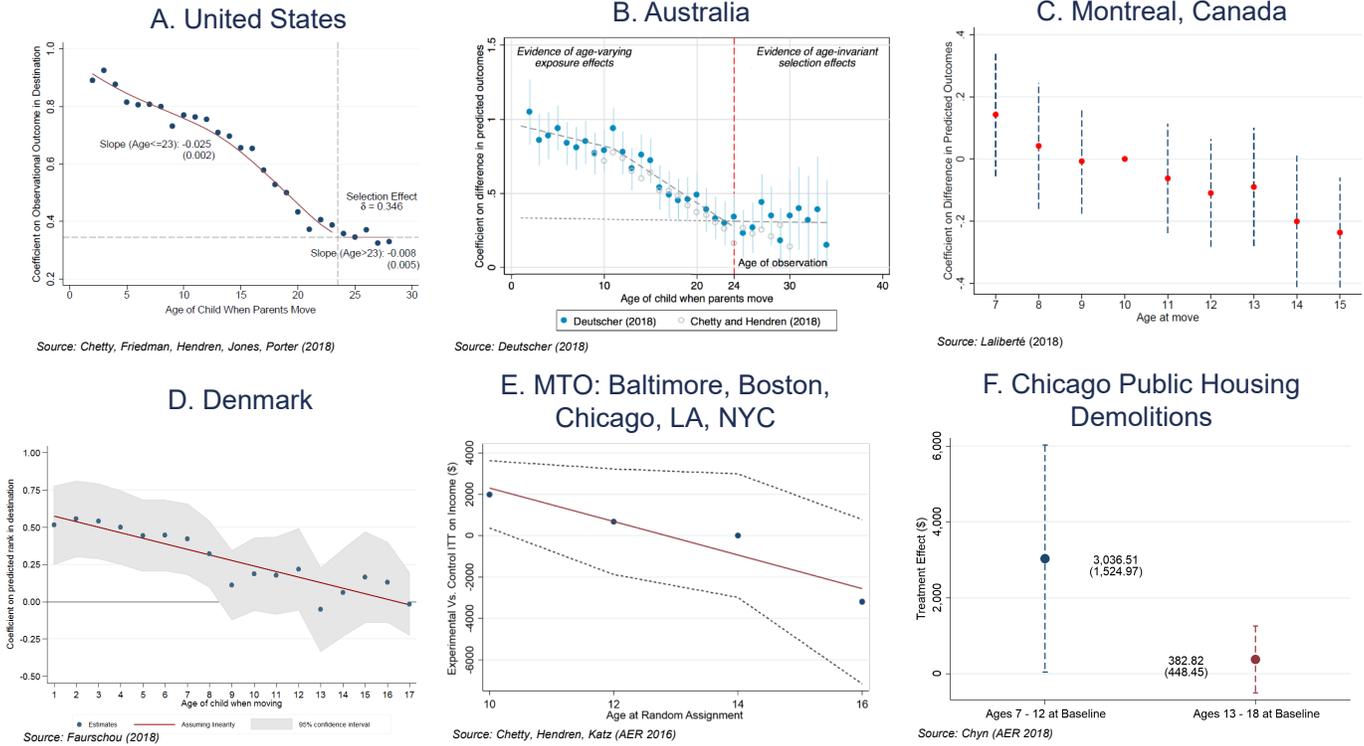
Notes: This figure reproduces estimates from a recent set of papers estimating the the causal effects of the neighborhood in which a child grows up on his or her outcomes in adulthood. Each panel depicts the causal effect of moving to an area with better observed outcomes, by the age at which children make that move. Panels A-D all use variants of the movers research design developed in Chetty and Hendren (2018) to estimate childhood exposure effects. Panel A presents tract-level estimates of exposure effects on income in the U.S. from Chetty, Friedman, Hendren, Jones and Porter (2018). Panel B presents estimates of exposure effects on income in Australia from Deutscher (2018). Panel C presents estimates of exposure effects on university enrollment in Montreal, Canada from Laliberté (2018). Panel D presents exposure effect estimates on income in Denmark from Faurschou (2018). Panel E shows treatment effects on income in adulthood by age at move from the Moving to Opportunity experiment studied in Chetty, Hendren and Katz (2016). Panel F shows Chyn's (2018) estimates of the effect of moving to a better neighborhood on income in adulthood by age at move, exploiting the demolition of public housing projects as a quasi-experiment.

APPENDIX FIGURE 2: Preliminary vs. Final Versions of Opportunity Atlas Upward Mobility Measures

Final Version of Opportunity Atlas   **Preliminary Forecasts Used to Define High-Opportunity Areas**
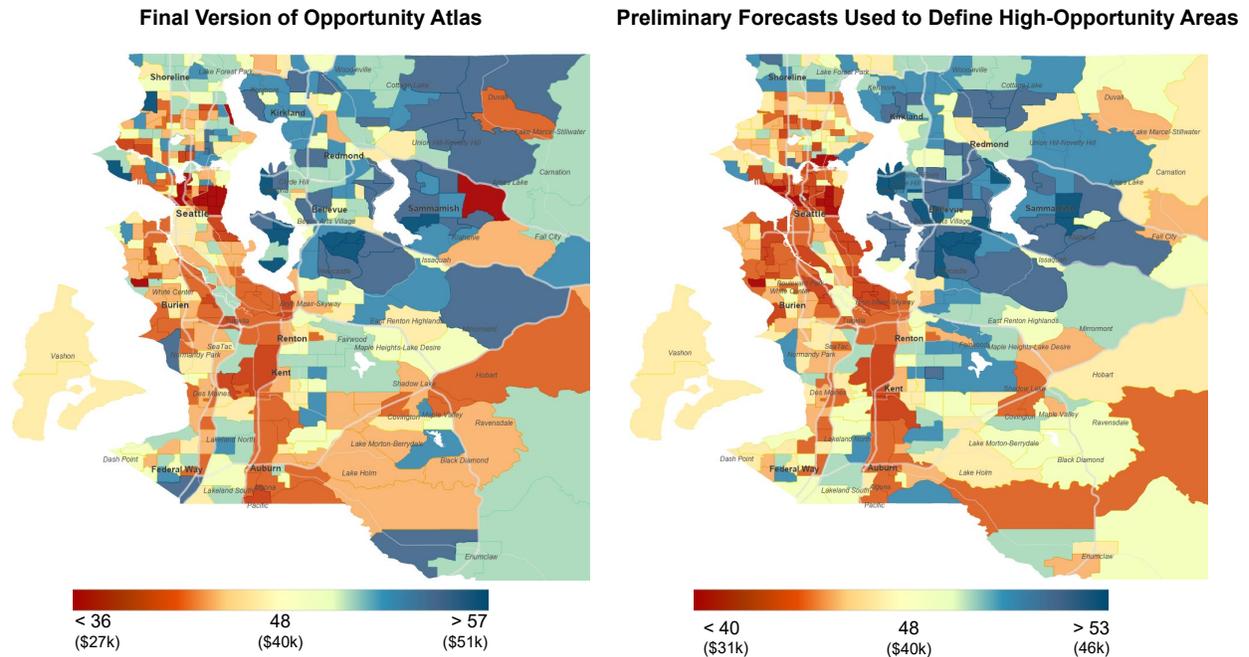
Population-Weighted Correlation Across Tracts: 0.74

These maps must be printed in color to be interpretable

Notes: This figure compares the final version of the upward mobility measures from the Opportunity Atlas (shown in Figure 2b) – which are the statistics we use to measure the impacts of the CMTO intervention – to the preliminary forecasts that we used to define the "high opportunity" neighborhoods shown in Figure 2a. See notes to Figure 2 for details on the definition of upward mobility, Chetty et al. (2018) for details on the construction of the final Opportunity Atlas measure, and Appendix A for details on how the preliminary forecasts of upward mobility were constructed.

APPENDIX FIGURE 3: Map of Origin Tracts for Voucher Recipients
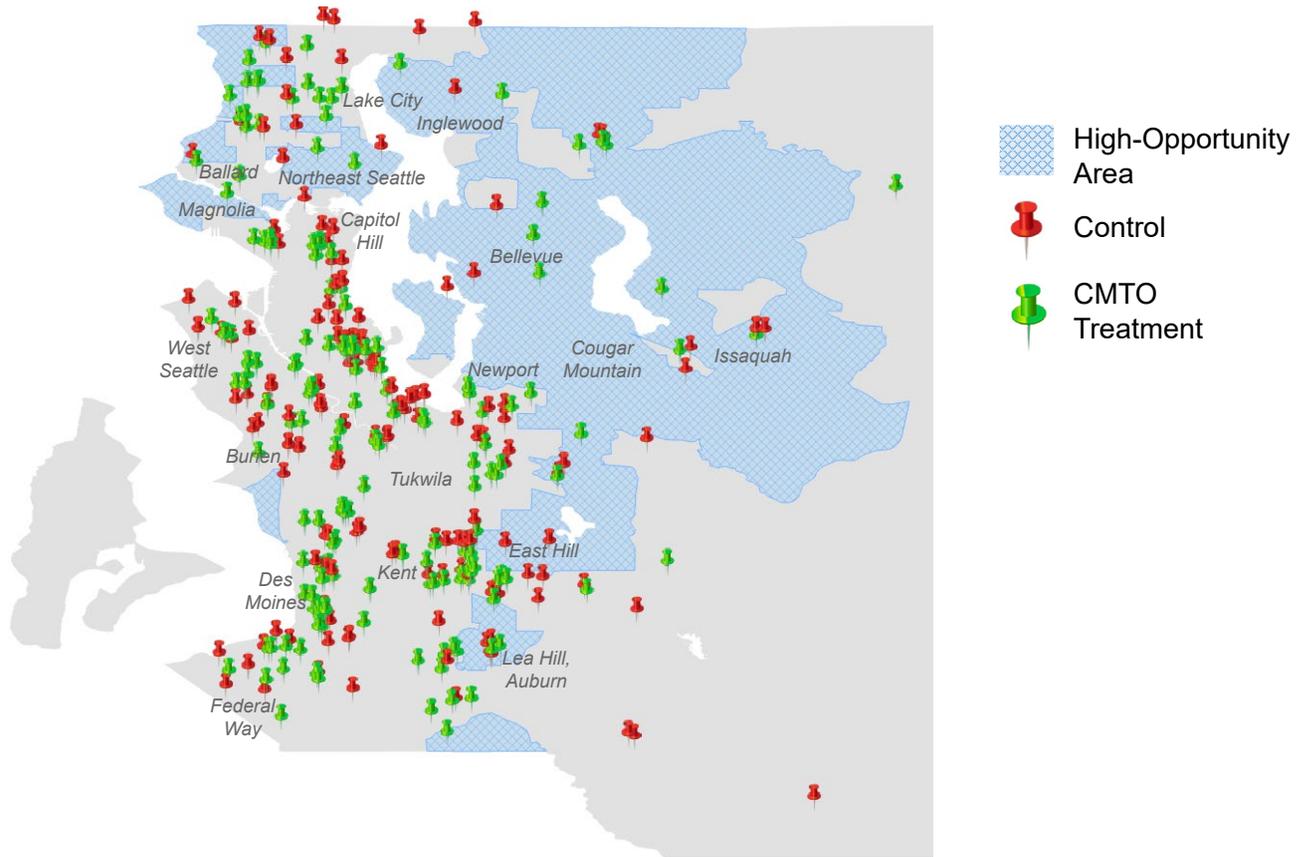
Notes: This figure presents a map of the tracts where participants in the CMTO study lived at baseline, by treatment or control group assignment. High-opportunity areas are highlighted in blue cross-hatch. Voucher recipients whose origin location was outside the area of Seattle and King County (86 recipients), who where homeless at baseline and didn't report an origin location (6 recipients), or whose voucher was transferred to a PHA not in the study (3 recipients) are excluded from the map. To protect confidentiality, we add a small amount of random noise to the destination tract centroids shown in the maps.

APPENDIX FIGURE 4: Predicted Treatment Effects on Other Long-Term Outcomes

A. Teenage Birth Rates of Children from Low-Income Families
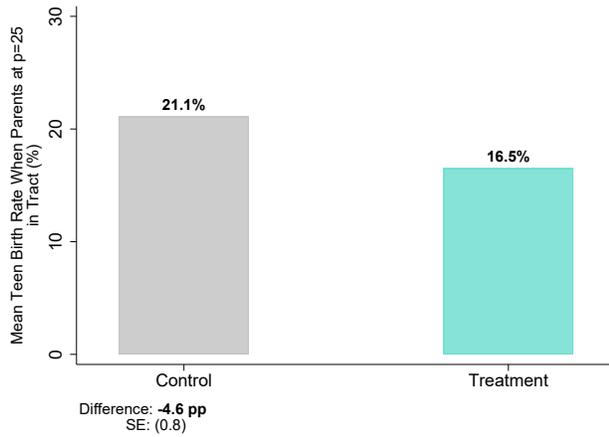
B. Incarceration Rates of Children from Low-Income Families
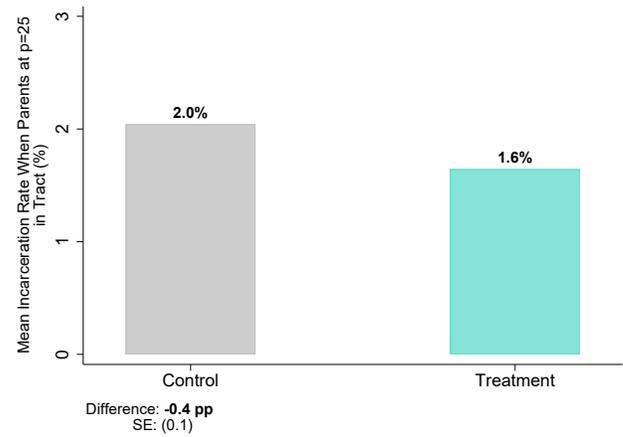
Notes: These figures replicate Panel D of Figure 4, plotting the predicted effects of CMTO on other long-term outcomes based on the destination tract to which families moved. Importantly, as in Figure 4d, these are not outcomes of CMTO participants themselves. Rather, they are outcomes of children in the 1978-83 birth cohorts who grew up in households with family income at the 25th percentile of the national income distribution in the destination neighborhoods to which CMTO participants moved. Panel A presents the predicted effect on the tract-level teenage birth rates for women, drawing on data from the Opportunity Atlas. Panel B presents the predicted effect on incarceration rates (on April 1, 2010) for children who grew up in the tract. We construct these in exactly the same way as Panel D of Figure 4, simply changing the outcome variable; see notes to that figure for details.

APPENDIX FIGURE 5: Unconditional Short-Run Persistence of Treatment Effects on Neighborhood Choice
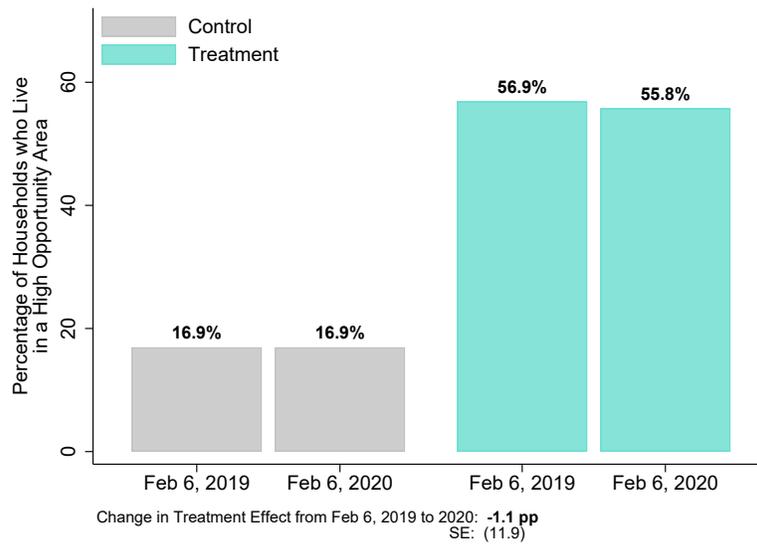
Notes: This figure replicates Panel A of Figure 9, but does not condition on families leasing up a unit. See notes to that figure for details.

APPENDIX FIGURE 6: Treatment Effects on Post-Move Neighborhood Satisfaction

A. Satisfaction with New Neighborhood

Difference in % Very Satisfied: **17.3pp**
SE: (10.1)

B. Certainty about Wanting to Stay in New Neighborhood

Difference in % Very Sure Want to Stay: **16.3pp**
SE: (9.7)
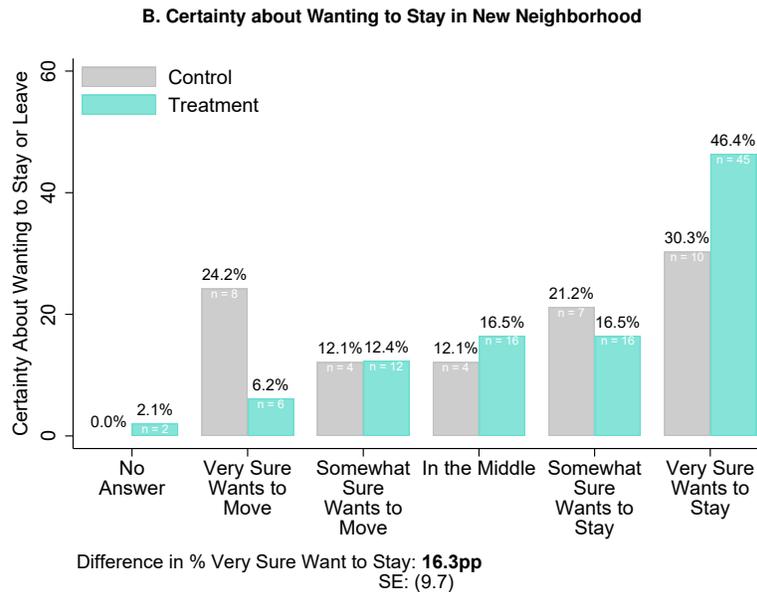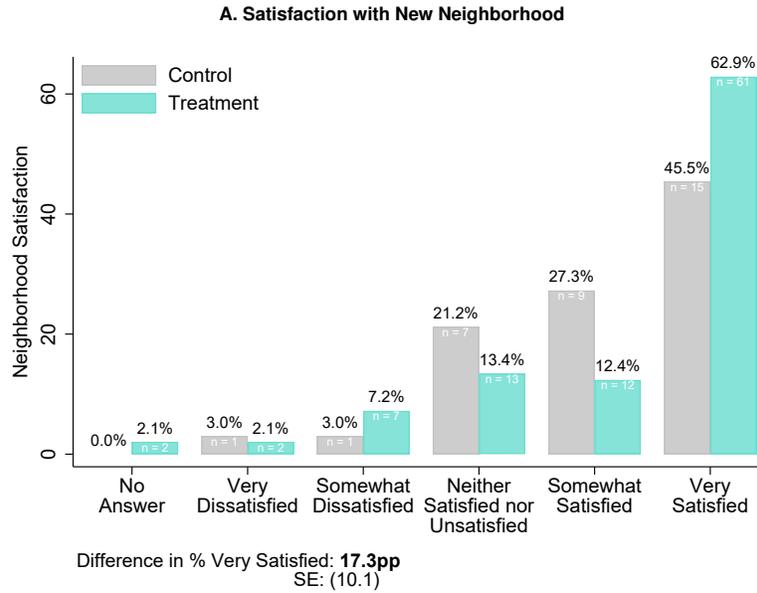
Notes: This figure uses data from a follow-up qualitative survey administered to a random sample of CMTO participants. Panel A shows the distribution of neighborhood satisfaction in the treatment and control groups. Participants were asked, "Which of the following statements best describes how satisfied you are with your current neighborhood? 1. Very Satisfied - 2. Somewhat satisfied - 3. In the middle - 4. Somewhat dissatisfied - 5. Very dissatisfied - 6. (No Answer)." Panel B presents measures of the certainty with which participants want to stay in their new neighborhood. Participants were asked, "Which of the following statements best describes how you feel about staying in your current neighborhood? - 1. Very sure I want to stay - 2. Somewhat sure I want to stay - 3. In the middle - 4. Somewhat sure I want to move to a different neighborhood - 5. Very sure I want to move to a different neighborhood - 6. (No Answer)." The sample consists of all households who leased-up and were surveyed after lease-up.

APPENDIX FIGURE 7: Changes to King County Housing Authority Payment Standards in March 2016
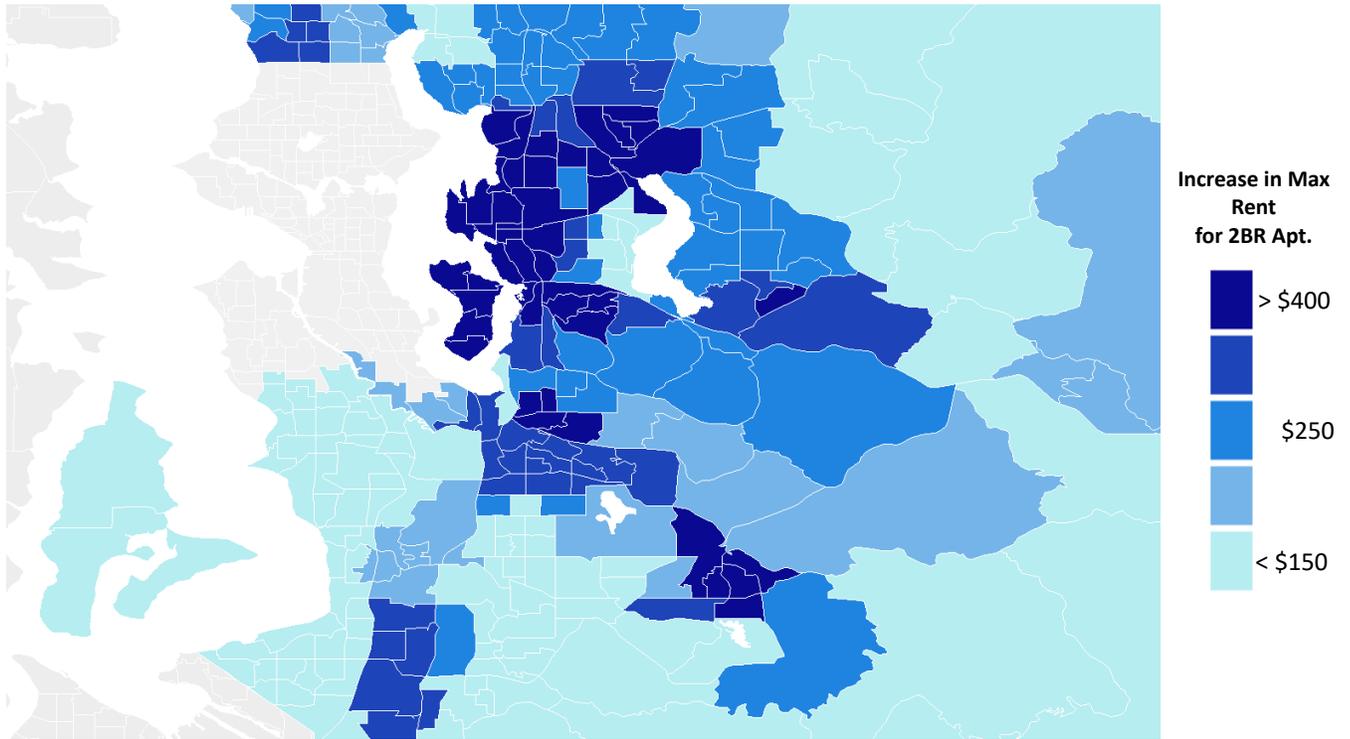
Notes: This figure maps the changes in payment standards implemented in March 2016 by KCHA. The map plots the changes in the maximum monthly rent for a two-bedroom apartment that could be paid for using a housing voucher from KCHA, comparing maximum rents in the pre-period (January 2015 to February 2016) to the post-period (March 2016 to December 2017). Darker areas experienced larger increases in maximum rent allowances.

APPENDIX E

COLLATERALIZED FUNDS REPORTS

APPENDIX RELATED TO MTW FUNDS PLEDGED AS COLLATERAL

GREEN RIVER HOMES
Project Description:
- Number of separate housing sites: 1
- Type of Residents: Family
- Number and Type of Units: 59 units total
    - 1-bedroom-8 units
    - 2-bedroom-30 units
    - 3-bedroom-16 units
    - 4-bedroom-4 units
    - 5-bedroom-1 unit
    - Non-dwelling space: none

Financing Terms:
- Pro forma-see Attachment A
- Amortization schedule-see Attachment B

Certification: See Attachment C

Bank Statement: See Attachment D

MOVING KING COUNTY RESIDENTS FORWARD
Project Description:
- Number of separate housing sites: 22
- Type of Residents: Family and Senior
    - Family units-469
    - Senior units-40
- Number and Type of Units: 509 total
    - 1-bedroom-43 units
    - 2-bedroom-256 units
    - 3-bedroom-197 units
    - 4-bedroom-11 units
    - 5-bedroom-2 unit
    - Non-dwelling space: none

Financing Terms:
- Pro forma-see Attachment E
- Amortization schedule-see Attachment F

Certification: See Attachment G

Bank Statement: See Attachment H

ATTACHMENT A

RBC Capital Markets®

Project Financial Projections

Green River Homes
Auburn, WA

Printed: 11/28/11 1:22 PM
Revised: 11/22/11

These projections do not guarantee actual operating results. Information herein may be revised based upon changes to assumptions and third-party information Inapplicable schedules may be omitted. This information is proprietary and may be shared only with RBC's prior consent.

OPM Version 4-4a, January 28, 2011

V:\data\Common\Properties -combined-\Green River Homes - Auburn, WA\PROJECTIONS\[OPM v4-4a Green River Homes 11-23-11.xls]TOC

General Information and Financing Assumptions

Green River Homes

Property Information

Project Name	Green River Homes
City	Auburn
County	King
State	WA
Number of Total Units	59
Number of Qualified Units	59
Qualified Manager Unit	0
Number of Buildings	38
Commercial Space	No
New Construction/Rehabilitation	Rehabilitation
Property Type	Garden
Market Type	Suburban
Target Tenant	Family
Developer	King County Housing Authority
LEED Certification	No

Project Dates

Model Start Date	1/1/2011
LP Partnership Close	1/1/2011
Construction Start Date	1/1/2012
Construction Completion Date – First Bldg.	12/1/2012
Construction Completion Date – Final Bldg.	7/1/2012
Operations Start Date	7/1/2012
Months to First year of Operations	6
First Tax Credit Month	7/1/2012
Lease-up Status	
Lease-up Period (Months)	10
100% Qualified Occupancy	12/31/2012
Depreciation Start Date	7/1/2013
Permanent Loan Closing Date	7/1/2013

Tax Credits

Low Income Housing Tax Credit

	Inception	Applicable
Allocation Yr:	2011	DDA/QCT	No
Type of Deal:	4%	QCT #:	

OPERATING ENTITY STRUCTURE

Operating Partnership / LLC: Green River Homes 2, LLC

Managing GP	King County Housing Authority
Other GP	
Lower Tier LP	RBC – Green River, LLC
Special LP	RBC Tax Credit Manager II, Inc.

Permanent Financing / Cash Flow Assumptions

Prime Interest Rate
Applicable Federal Rate

Sources and Uses Schedule
Green River Homes

Sources

	Total
	$
CP Loan (tax exempt bonds $9.5mm)	12,986,000
Accrued capitalized interest during construction	43,100
Grants (reduction of basis)	
Grants (no reduction of basis)	
Other	
Capital – General Partner	
Capital – Limited Partner (LPA)	4,384,970
Capital – Special Limited Partner	
Capital – State Credit Limited Partner	
Total Sources	**$ 17,937,710**

Capital Contributions

	Varies	
Monthly Construction Draws	11/1/2011	0.00% $
Partnership Closing, AHAP		10.24% 500,000
		0.00%
		0.00%
		0.00%
		0.00%
		0.00%
		0.00%
100% QC: 1.15X IEE, Final Cost Cert, FCO, HAP; 2/1/2013	7/1/2013	89.76% 4,384,970
		0.00%
		0.00%
		0.00%
		$ 4,884,970

Total

Tax Exempt Bond Proceeds	9,500,000
Less: Non-Eligible Uses Funded by Bonds	
Other Adjustments	
Other Adjustments	
Total Bond Proceeds	9,500,000
Aggregate Basis and Land	17,338,000
Other Adjustments	(7,138,000)
Total Aggregate Basis and Land	53.41%

Uses

	Total	Eligible Basis	Depreciable	Funded Expense	Non Depreciable	Aggregate Basis & Land	Comments
Land							
Acquisition Building		906,042	3,621,958	3,823,998	·	906,042	906,043
Subtotal	4,530,000	3,923,051	3,621,958	3,823,998	· 906,042	3,623,918	
Hard Costs – Const Contract		7,134,301	7,134,301	7,134,301			7,134,301
Construction Contingency		851,339	851,339	851,339	·	·	851,339
Builder's Overhead & Profit		321,264	321,264	321,264	·	·	321,264
Hard Costs – Other		1,710,301	1,710,301	1,710,301	·	·	1,710,301
Subtotal	10,312,705						
Soft Costs		1,675,202	1,652,202	1,652,202	10,000	13,000	1,628,432
Tax Credit Fees		48,075			48,075	·	·
Soft Cost Contingency		23,000				23,000	23,000
Subtotal	1,748,377						
Construction Loan Interest – Paid		16,800	8,855	8,855	7,945		8,855 Calculated
Construction Loan Interest – Accrued		43,120	29,840	29,240	13,380	·	29,340 Calculated
Subtotal	59,850						
Permanent Loan Fees		70,433			70,433		
Construction Loan Fees		5,000	5,000	5,000	·	·	5,000
Subtotal	75,434						
Organization		35,100			35,100	30,200	
Syndication Costs		34,000					
Marketing and Leasing		20,000			13,000	10,000	
Start up Expense							
Subtotal	89,340						
Developer Fee		502,000	482,500	482,500	·	17,500	461,500
Subtotal	508,000						
Replacement Reserve							
Operating Reserve							
Debt Service Reserve							
Bad Boys Tax/Insurance Escrow							
Start up Reserve							
Deferred Development Reserve		211,256			211,256	·	211,256
Subtotal	211,256						
Total Uses	**$ 17,487,708**	**$ 16,849,460**	**$ 16,659,660**	**$ 195,531**	**$ 1,312,728**	**$ 17,134,098**	

Green River Homes

Low Income Housing Tax Credit Calculation

Item	Rehabilitation	Acquisition
Eligible Basis	$ 16,019,460	
Less:		
Acquisition Cost	(3,623,958)	3,623,958
Residential Historic Tax Credits	-	-
Grants	-	-
Other Credit's adjustment	-	-
Dev. Fee in acquisition	(123,060)	123,060
Relocation	(42,660)	-
Ineligible Soft Costs	(23,750)	-
	-	-
	12,206,032	3,747,018
DDA/QCT Adjustme No	100%	100%
Eligible Basis	12,206,032	3,747,018
Basis Limitation	-	-
Total Eligible Basis	12,206,032	3,747,018
Low Income Percentage	100.00%	100.00%
Qualified LIHTC Basis	12,206,032	3,747,018
Tax Credit Percentage	3.19%	3.19%
LIHTC Calculated 508,902	389,372	119,530
LIHTC Reservation 508,902	389,372	119,530
Allowable LIHTC 508,902	389,372	119,530

Historic Tax Credit Calculation

Item	Federal Historic Rehab Credit		
	Residential	Commercial	Total
Depreciable Basis	$ -	$ -	
Less:			
Acquisition Cost	-	-	
Personal Property	-	-	
Sitework	-	-	
Bldg. Additions/(Demo)	-	-	
Ineligible Interest	-	-	
Other Ineligible Costs	-	-	
Grants	-	-	
Historic Tax Credit Basis	-	-	
Historic Tax Credit %	0%	0%	
Total Historic Tax Credit	$ -	$ -	$ -
Tax Credit Delivery			
2012	-	-	-
2013	-	-	-
2014	-	-	-
2015	-	-	-

State LIHTC   No

Eligible Basis	
Adjustments	-
Adjustments	-
Adjustments	-
Total Basis	-
Credit Percentage	0%
Tax Credits	-

State Historic   No

Depreciable Basis	
Adjustments	-
Adjustments	-
Adjustments	-
Total Basis	-
Credit Percentage	0%
Tax Credits	-

Other Credits

Basis	
Adjustments	-
Adjustments	-
Adjustments	-
Total Basis	-
Credit Percentage	0%
Tax Credits	-

Summary of Operating Partnership Benefits
Green River Homes

Year	Equity Contribution	Projected Taxable Income (Loss)	Deduct Stressed Cash Flow 100.00%	Projected Tax Benefits 35.00%	Projected Federal Housing Tax Credits	Projected Historic Rehab Tax Credits	Projected Other Tax Credits	Projected State Tax Credits	Federal Tax Effect on State Credits Yes	Projected Total Tax Benefits	0.00% Projected Cash Flow	Total Investing L.P. Benefits
2011	$ 500,000	$ -	- $	- $	$	$	$	$	- $	$ -	$ -	$ -
2012		(545,526)	-	190,934	146,619					337,553		337,553
2013	4,384,970	(396,481)	-	138,768	508,851					647,619		647,619
2014		(370,295)	-	129,603	508,851					638,454		638,454
2015		(353,781)	-	123,823	508,851					632,674		632,674
2016		(342,627)	-	119,919	508,851					628,770		628,770
2017		(331,320)	-	115,962	508,851					624,813		624,813
2018		(329,467)	-	115,313	508,851					624,164		624,164
2019		(335,423)	-	117,398	508,851					626,249		626,249
2020		(319,619)	-	111,867	508,851					620,718		620,718
2021		(308,185)	-	107,865	508,851					616,716		616,716
2022		(303,306)	-	105,157	362,232					468,389		468,389
2023		(360,618)	-	126,216	-					126,216		126,216
2024		-			-					-		-
2025		-			-					-		-
2026		-			-					-		-
2027		-			-					-		-
2028		-			-					-		-
2029		-			-					-		-
Totals	4,884,970	(4,296,648)	-	1,503,825	5,088,510	-	-	-	-	6,592,335	-	6,592,335
Sale	N/A	(588,322)	N/A	205,913	N/A	N/A	N/A	N/A	N/A	205,913	-	205,913
Totals	$ 4,884,970	$ (4,884,970)	- $	$ 1,709,738	$ 5,088,510	- $	- $	- $	- $	$ 6,798,248	$ -	$ 6,798,248

The equity contributions have been adjusted for the Limited Partners share of the 1602 exchange funds in the amount of $ -

L.P. Income (Loss) %	99.99%
L.P. Cash Flow %	99.99%
L.P. Tax Credit %	99.99%

Rental Income
Green River Homes

Rental Income   Base year: 2012

Bedroom	Units Series	% of AMI	Average Sq. Ft. per Unit	# of Units	Tenant Paid	Subsidy	Net Rent	Monthly Income	Annual Rental Income	Utility Allowance	Max LIHTC NET Rent	% Discount to Max TC	Market	% Discount to Market
						PER UNIT								
Low Income Units														
1	Section 8	50.00%	677	1	200	564	764	3,056	36,672	56	758	-0.79%	810	5.68%
2	Section 8	50.00%	881	15	200	676	876	13,140	157,680	71	906	3.31%	925	5.30%
3	Section 8	50.00%	1,146	8	200	999	1,199	9,592	115,104	88	1,040	-15.29%	1,155	-3.81%
2	Section 8	50.00%	1,333	2	200	1,121	1,321	2,642	31,704	112	1,146	-15.27%	1,330	0.68%
2	Section 8	50.00%	1,836	1	200	1,343	1,543	1,543	18,516	112	1,277	-20.83%	1,600	3.56%
1	Section 8	60.00%	677	4	200	564	764	3,056	36,672	56	921	17.05%	810	5.68%
1	Section 8	60.00%	881	15	200	676	876	13,140	157,680	71	1,102	20.31%	925	5.30%
2	Section 8	60.00%	1,146	9	200	999	1,199	9,592	115,104	88	1,266	5.29%	1,155	-3.81%
2	Section 8	60.00%	1,333	2	200	1,121	1,321	2,642	31,704	112	1,398	5.51%	1,330	0.68%
Total Low Income Units				59				58,403	700,836			5.27% / 80.86%		2.06% / 80.21%

Tenant paid only

Market Rate Units

Subtotal - Market Units

N/A   N/A   N/A

Manager's Unit

Total Units   59   58,403   700,836

Vacancy Rate LIHTC:	5.0%	
Vacancy Rate Market:	5.0%	
Rental Income Inflation %	102.00%	

Rental Subsidy Inflation	102.00%	102.00%
Last Date of Rental Subsidy	1/1/2023	
Rental Subsidy Vacancy	5.0%	5.0%

Other Income

Other Income	Per Unit	Per Unit/Month
Garage \ Carport	$	$
Parking		
Storage		
Laundry		
Washer \ Dryer Rental		
Fees \ Charges		
Other \ Misc.		
Total Other Income	$	$
Average Other Income /unit/month		
Other Income Vacancy:	5.0%	
Other Income Inflation %	102.00%	

Leaseup and Expenses

Green River Homes

LEASEUP

2012

	LL Units	Market Units	Units	Percent Leased
January	-	-		0.00%
February	-	-		0.00%
March	-	-		0.00%
April	-	-		0.00%
May	-	-		0.00%
June	9	-		0.00%
July	9		9	15.25%
August	19		19	32.20%
September	29		29	49.15%
October	39		39	66.10%
November	49		49	83.05%
December	59		59	100.00%
Total	**204**		**204**	

2013

	LL Units	Market Units	Units	Percent Leased
January	59		59	100.00%
February	59		59	100.00%
March	59		59	100.00%
April	59		59	100.00%
May	59		59	100.00%
June	59		59	100.00%
July	59		59	100.00%
August	59		59	100.00%
September	59		59	100.00%
October	59		59	100.00%
November	59		59	100.00%
December	59		59	100.00%
Total	**708**		**708**	

2014

	LL Units	Market Units	Units	Percent Leased
January	59		59	100.00%
February	59		59	100.00%
March	59		59	100.00%
April	59		59	100.00%
May	59		59	100.00%
June	59		59	100.00%
July	59		59	100.00%
August	59		59	100.00%
September	59		59	100.00%
October	59		59	100.00%
November	59		59	100.00%
December	59		59	100.00%
Total	**708**		**708**	

2015

	LL Units	Market Units	Units	Percent Leased
January	59		59	100.00%
February	59		59	100.00%
March	59		59	100.00%
April	59		59	100.00%
May	59		59	100.00%
June	59		59	100.00%
July	59		59	100.00%
August	59		59	100.00%
September	59		59	100.00%
October	59		59	100.00%
November	59		59	100.00%
December	59		59	100.00%
Total	**708**		**708**	

OPERATING EXPENSES

Expenses	Expense	Per Unit	Per Unit/Month
Variable Expenses			
Administrative	$ 24,190	$ 410	$ 34
Repairs and Maintenance	51,330	870	73
Utilities	25,960	440	37
Water and Sewer	47,200	800	67
Payroll	129,800	2,200	183
Subtotal Variable Expenses	278,480	4,720	$ 393
Fixed Expenses			Per Month
Insurance	20,000	339	1,667
Other	2,656	45	221
Real Estate Taxes - Total	-		-
Subtotal Variable & Fixed	301,136	5,104	
Management Fee	46,606	790	66
Total Operating Expense	347,742	5,894	
Replacement Reserve	17,700	300	1,475
Total Expenses & R.R.	$ 365,442	$ 6,194	

Expense Inflation %	103.00%	103.00%
Real Estate Tax inflation %	103.00%	103.00%
Real Estate Tax Abatement	No	

Management Fee

Percentage of EGI	7.000%	46,606
Min Monthly Fee	$	
Fee / unit / month	$	
Inflation	103.00%	103.00%

Replacement Reserve

	Per Unit	Annual	Inflation
Start Date 7/1/2013	$ 300	$ 17,700	-
RBC		103.00%	103.00%
Lender		100.00%	100.00%

Projected Cash Flow
Green River Homes

Item																						

Gross LIHTC Rental Revenue
Gross Market Rental Revenue
Less: Vacancies
Net Rental Revenue
Rental Subsidy (HAP)
Other Income (Net)
Commercial Income
Effective Gross Income

Operating Expenses:
Variable Expenses
Insurance
Management Fee
Other
Real Estate Taxes - Total
Allowance of Real Estate Taxes
Project Operating Exp.

NOI Before Replacement Reserves

Replacement Reserves

Net Operating Income

Plus Other Cash Sources:
Interest on Reserve Accts.
Other
Total Other Cash Sources

Subtotal

Less Other Cash Requirements:
Construction Loan Interest 1st
                            1st

Asset Management Fee
Cash Flow Prior to Final Closing
Replenish Operating Reserve
Repay Loan
Deferred Developer Fee
GP Loan Net (except based on SV share and unable to yield $3.0mm)

Subtotal

Funded from Reserves
Funded by Operating Deficit Guarantee

Cash Flow available for Distribution

LP Cash Distribution

Cash Flow to Fund

Cumulative Cash Flow to Fund

Income to Expense Ratio

Projected Taxable Income/(Loss)

Green River Homes

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
NOI Before Replacement Reserves	$ -	$ 86,843	$ 321,393	$ 314,721	$ 328,014	$ 331,198	$ 334,336	$ 337,735	$ 340,895	$ 344,008	$ 347,025	$ 350,087	$ 307,649	$ 304,718	$ 306,361	$ 308,768	$ 309,880	$ 311,344	$ 312,781
Other Taxable Income:																			
Interest on Reserve Accts.	-	264	3,187	3,302	3,573	3,857	978	1,277	308	625	951	1,288	1,634	357	724	1,103	1,493	1,894	414
Other Income	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Other Income	-	264	3,187	3,302	3,573	3,857	978	1,277	308	625	951	1,288	1,634	357	724	1,103	1,493	1,894	414
Other Deductible Expenses:																			
Construction Loan Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset Management Fee	-	(705)	(8,454)	(8,454)	(8,454)	(8,454)	(8,454)	(8,454)	(8,454)	(8,454)	(8,454)	(8,454)	(7,950)	-	-	-	-	-	-
Cash Flow Prior to Final Closing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Replenish Operating Reserves	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Repay Loans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Deferred Developers Fee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GP Loss (tax exempt bonds $9.5mm and taxable bonds $3.4mm)	(932)	(41,888)	(75,257)	(73,346)	(71,979)	(70,584)	(67,896)	(66,461)	(64,999)	(63,519)	(62,014)	(60,483)	(58,927)	(57,618)	(56,280)	(54,923)	(53,553)	(52,168)	(50,767)
Less Capitalized Interest	932	28,308	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Deductible Expenses	-	(14,285)	(83,711)	(81,800)	(80,433)	(79,038)	(76,350)	(74,915)	(73,453)	(71,973)	(70,468)	(68,937)	(66,877)	(57,618)	(56,280)	(54,925)	(53,553)	(52,168)	(50,767)
Amortization Funded Expenses	-	21,433	26,422	12,129	12,129	12,129	8,599	5,069	5,069	5,069	5,069	5,069	5,069	5,069	5,069	5,069	3,466	1,526	1,797
Depreciation	-	596,970	610,952	604,226	592,845	586,649	581,918	588,528	598,138	587,242	580,705	580,705	597,591	605,759	593,815	583,949	580,547	578,438	591,267
Total Other Expenses	-	618,403	637,374	616,355	604,974	598,778	590,517	593,597	603,207	592,311	585,774	585,774	602,660	610,828	598,884	589,018	584,013	579,964	593,064
Taxable Income (Loss)	$ -	$ (545,581)	$ (396,521)	$ (370,321)	$ (353,816)	$ (342,661)	$ (331,353)	$ (329,500)	$ (335,457)	$ (319,651)	$ (308,216)	$ (303,336)	$ (360,654)	$ (363,331)	$ (345,879)	$ (334,072)	$ (326,195)	$ (318,894)	$ (330,636)
Pre-Admission Income (Loss)									-	-	-	-	-	-	-	-	-	-	
Initial Income Loss to LP	-	(545,526)	(396,481)	(370,295)	(353,781)	(342,627)	(331,320)	(329,467)	(335,423)	(319,619)	(308,185)	(303,306)	(360,618)	(363,295)	(345,844)	(334,039)	(326,162)	(318,822)	(330,604)
Reallocation of Losses to GP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Taxable Income (Loss) to Fund	$ -	$ (545,526)	$ (396,481)	$ (370,295)	$ (353,781)	$ (342,627)	$ (331,320)	$ (329,467)	$ (335,422)	$ (319,619)	$ (308,185)	$ (303,306)	$ (360,618)	$ (363,295)	$ (345,844)	$ (334,039)	$ (326,161)	$ (318,822)	$ (330,604)
Cumulative Taxable Income (Loss)	-	(545,526)	(942,007)	(1,312,302)	(1,666,083)	(2,008,710)	(2,340,030)	(2,669,497)	(3,004,920)	(3,324,539)	(3,632,724)	(3,936,030)	(4,296,648)	(4,659,943)	(5,005,787)	(5,339,826)	(5,665,988)	(5,984,810)	(6,315,414)
Total Tax Credits																			
LIHTC - Federal	-	146,834	308,902	308,902	308,902	308,902	308,902	308,902	308,902	308,902	308,902	302,264	-	-	-	-	-	-	-
To the Fund	$ -	$ 146,819	$ 308,871	$ 308,871	$ 308,871	$ 308,871	$ 308,871	$ 308,871	$ 308,871	$ 308,871	$ 308,871	$ 302,232	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Historic - Federal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
To the Fund	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Credits	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
To the Fund	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
LIHTC - State	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
To the Fund	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Historic - State	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
To the Fund	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total State Tax Credits	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Depreciation & Amortization Schedule
Green River Homes

Cash Flow / Mortgage Amortization Schedules
Green River Homes

Schedules 8 to 10

Cash Flow Prior to Final Closing
Loan Amount
Interest Rate
Amort Term (mos)
Monthly Payment

Replacement Operating Reserve
Loan Amount
Interest Rate
Amort Term (mos)
Monthly Payment

Equity Lease
Loan Amount
Interest Rate
Amort Term (mos)
Monthly Payment

Deferred Developer Fee
Loan Amount
Interest Rate
Amort Term (mos)
Monthly Payment

Cash Flow / Mortgage Amortization Schedules
Green River Homes

Reserve Accounts
Green River Homes

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Replacement Reserve
Operating Reserve
Debt Service Reserves
Real Estate Tax/Insurance Escrow
Start up Reserve
Deferred Development Reserve

Capital Account Analysis
Green River Homes

Flow of Funds

Great River Homes

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Sources

Total Sources

Uses

Total Uses

Check Figure

Flow of Funds
Green River Homes

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Sources

Permanent Conversion Date														Total

Seller Carryback/Master Lease Pmt
Construction Loan 4
Construction Loan 5
ABC Loan

7/1/2013	
7/1/2013	
7/1/2013	
7/1/2013	
7/1/2013	
7/1/2013	
7/1/2013	
7/1/2013	
7/1/2013	
7/1/2013	

GP Land (tax exempt bonds 99.5+)   12/15/2012
                                    7/1/2013
                                    7/1/2013
                                    7/1/2013
                                    7/1/2013

Accrued capitalized interest during construction

Grant reduction of basis
Grant (no reduction of basis)
Other
Capital – General Partner
Capital – Limited Partner (LPAs)

Capital – Special Limited Partner
Capital – State Credit Limited Partner
Excess Proceeds
Construction Interest

Total Sources

Uses

Committed in % Complete														

Land
Acquisition Building
Hard Costs – Const Contract
Construction Contingency
Builder's Overhead & Profit
Hard Costs – Other
Soft Costs
Tax Credit Fee
Soft Cost Contingency
Permanent Loan Fee
Construction Loan Fees
Capitalized
Syndication Costs
Marketing and Leasing
Start up Deposit
Developer Fee
Replacement Reserve
Operating Reserve
Debt Service Reserve
Real Estate Tax/Insurance Escrow
Rent up Reserve
Deferred Development Reserve
   Total Uses before Interest

Construction Loan Interest – Paid
Construction Loan Interest – Accrued
   Total Interest

Total Uses

Check Figures

Construction Interest Schedule
Green River Homes

ATTACHMENT B

Attachment B
Green River Loan, Collateralized
Amortization Schedule

Month	Beginning Balance	Interest Rate	Interest Charge	Principal	Ending Balance
Jun-11	9,500,000	0.00%	0	0	9,500,000
Dec-11	9,500,000	0.00%	0	0	9,500,000
Jun-12	9,500,000	0.00%	0	0	9,500,000
Dec-12	9,500,000	0.00%	0	0	9,500,000
Jun-13	9,500,000	0.75%	35,625	0	9,500,000
Dec-13	9,500,000	0.75%	35,625	0	9,500,000
Jun-14	9,500,000	1.00%	47,500	0	9,500,000
Dec-14	9,500,000	1.00%	47,500	863,636	8,636,364
Jun-15	8,636,364	1.00%	43,182		8,636,364
Dec-15	8,636,364	1.00%	43,182	863,636	7,772,728
Jun-16	7,772,728	1.00%	38,864		7,772,728
Dec-16	7,772,728	1.00%	38,864	863,636	6,909,092
Jun-17	6,909,092	1.50%	51,818		6,909,092
Dec-17	6,909,092	1.50%	51,818	863,636	6,045,456
Jun-18	6,045,456	1.50%	45,341		6,045,456
Dec-18	6,045,456	1.50%	45,341	863,636	5,181,820
Jun-19	5,181,820	1.50%	38,864		5,181,820
Dec-19	5,181,820	1.50%	38,864	863,636	4,318,184
Jun-20	4,318,184	2.00%	43,182		4,318,184
Dec-20	4,318,184	2.00%	43,182	863,636	3,454,548
Jun-21	3,454,548	2.00%	34,545		3,454,548
Dec-21	3,454,548	2.00%	34,545	863,636	2,590,912
Jun-22	2,590,912	2.00%	25,909		2,590,912
Dec-22	2,590,912	2.00%	25,909	863,636	1,727,276
Jun-23	1,727,276	2.00%	17,273		1,727,276
Dec-23	1,727,276	2.00%	17,273	863,636	863,640
Jun-24	863,640	2.00%	8,636		863,640
Dec-24	863,640	2.00%	8,636	863,640	0

ATTACHMENT C

Attachment C

GREEN RIVER HOMES CERTIFICATION

I, Craig Violante, Director of Finance for the King County Housing Authority (KCHA), do hereby certify that whenever funds held in trust by the Bank of America as collateral against the loan from the Bank of America to KCHA which funded the Green River Homes re-development project are released as collateral, all such funds will be used for an eligible MTW activity or purpose that KCHA has received approval for through its MTW Plan.

Craig Violante (signature)   2/28/2020

Craig Violante, Director of Finance,   Date
King County Housing Authority

ATTACHMENT D

Client Statement
12/01/2019 to 12/31/2019

Account Number
416870

Bank of America, N.A.
P.O. Box 2010
Lakewood, NJ 08071

Office Servicing Your Account:
540 MADISON ST
IL4-540-28-01
CHICAGO, IL 60661
Fax: 980.233.7103

Account Representative:
CHRIS SCHUER
CHRISTOPHER.C.SCHUER@BAML.COM

KING COUNTY HOUSING
AUTHORITY GR2 PLEDGE ACCOUNT
600 ANDOVER PARK WEST
SEATTLE, WA 98188

283 - 1/2: 651

TABLE OF CONTENTS

Account Summary

Current Period Ending Value	**$0.00**
Net Income and Expenses	$136,173.86

Client Statement
12/01/2019 to 12/31/2019

Account Number
416870

Bank of America, N.A.
P.O. Box 2010
Lakewood, NJ 08071

Disclosure Statement

GENERAL - Securities transactions are recorded in your account on the settlement date shown on the confirmation or statement for such transactions (except in the case of cancellations or corrections where processing dates are used). Securities transactions having trade dates on or before, but settlement dates after, the date of the statement will appear on your next statement. Cash received or paid and securities received or delivered are shown as of the date of the activity. All cash received has been distributed in accordance with your instructions. Unless otherwise agreed, proceeds from pledged securities which mature or are sold are held until the pledge is released. Please advise your account representative promptly in writing of any material change in your investment objectives or financial situation. If you have a complaint, please call 1-888-221-9276 or notify us in writing at Bank of America, Bank of America Tower, One Bryant Park, Attn: Compliance Complaint Department Mail Code: NY1-100-17-01, New York, NY 10036.

DISCLOSURES - Bank of America, N.A. (BANA), is a subsidiary of Bank of America Corporation, the parent company of several banking institutions. BANA is a national bank and has registered a separately identifiable department as a municipal securities dealer with the Securities and Exchange Commission. BANA also has filed notice of its status as a government securities broker-dealer with the Office Comptroller of the Currency. From time to time, BANA or one or more affiliates may lend to one or more issuers whose securities are underwritten, dealt or placed by BANA or one or more of its affiliates. Please refer to the relevant prospectus offering statement or other disclosure document for material information relating to any such lending relationship and whether the proceeds of an issue will be used to repay any such loans. BANA may also from time to time participate in a primary or secondary distribution of the securities offered or sold to you by it. Further, BANA may act as investment advisor to an issuer whose securities may be sold to you by it.

SECURITY INTEREST - BANA shall have a continuing security interest in all securities, funds and other assets now and hereafter held or carried by BANA in your account(s), including any property in transit or held by others on behalf of BANA, and all proceeds thereof, as collateral security for the payment and performance by you of all your obligations to BANA now existing or hereafter arising and whether arising under your securities accounts or any other agreement between you and BANA, together with all costs and expenses of BANA in connection therewith (the "Obligations"). If you fail to perform any Obligation or if you are in default on any agreement between us, BANA may cancel any transaction or may, in a private or a public sale, sell out or buy in the securities shown in this statement, holding you liable for any loss incurred. BANA shall have, in addition to the rights provided herein or by other applicable law, all the rights and remedies provided to a secured party under the Uniform Commercial Code in the State of New York.

CALCULATION METHODOLOGY - The percentage of Portfolio column, the Asset Mix pie chart and the Maturity Schedule bar graph are calculated using the market value of the relevant securities when a market price is available to BANA. When a market price is not available, BANA uses the current par value.

NON-DEPOSIT INVESTMENT PRODUCTS - Non-deposit investment products purchased through BANA are NOT FDIC insured and, subject to the following sentence, are NOT deposits or other obligations of, or guaranteed by, Bank of America Corporation or any of its affiliates. Certain investment products are deposits of BANA or are obligations of Bank of America Corporation or an affiliate, as described at the time of purchase. An investment in securities involves investment risks, including possible loss of the principal amount invested.

RECORD OF OWNERSHIP - Securities held for your account by BANA or held in BANA's account at a securities depository are commingled with the same securities being held for other clients. Your ownership of these securities is reflected on BANA records.

CALLABLE SECURITIES - In the event any securities held by BANA for you in nominee name or in book entry (non-certificated) at a securities depository are called for partial redemption and BANA receives proceeds that belong to more than one person, BANA is authorized in its sole discretion to determine your proportionate share of such proceeds. Call features shown indicate the next regularly scheduled call date and price. Your holdings may be subject to other redemption features including sinking funds or extraordinary calls.

INTEREST, DIVIDENDS, SALE PROCEEDS - Although all figures shown are intended to be accurate, statement data should not be used for tax purposes, BANA is required by law to report to the Internal Revenue Service certain interest, dividend income and sales proceeds. Dividends and interest payments may be subject to country specific withholding taxes.

MARKET VALUATION/PRICE/ESTIMATED FIGURES - Securities positions are valued at or about the close of the statement period if prices are available from reference sources deemed reliable. For money market positions, if price is shown as N/A, a derived valuation (unadjusted for the credit quality) is provided based on the original cost basis reported to BANA and adjusted by the amount of any accrued discount from the purchase date to the end of the statement period. The month-end valuations of your portfolio are for guidance only and do not necessarily reflect prices at which each position could be sold for, if short, covered on the valuation date, particularly in the case of inactively or infrequently traded securities. BANA cannot guarantee the accuracy of such information. Information regarding average cost, unrealized gain or loss, accrued interest, current yield and estimated income figures that appear on your statement are derived from information provided by sources considered reliable by BANA. Contact your Account Representative to obtain current quotations or if you have questions regarding statement account valuations/estimated figures. N/A= Information not applicable or available at the time of statement creation.

ERRORS AND OMISSIONS - Please notify us within ten (10) days if you believe there is any inaccuracy in any entry reflected on this statement. Please include your account number when you notify us in writing. Failure to notify BANA of any error or omission will constitute your waiver of any claim arising as a result of such error or omission.

PROXY DISCLOSURES - Any attempt to vote securities will be void to the extent that such securities are not in the possession or control of BANA including (i) securities not yet delivered to BANA, (ii) securities purchased and not paid for by settlement date, and (iii) securities that BANA has hypothecated, re-hypothecated, pledged, re-pledged, sold, lent or otherwise transferred. Please be advised that for the purposes of proxy voting, customers will not be notified that the securities are not in BANA'S possession or control. Furthermore, BANA will not notify customers that a vote was void.

Client Statement
12/01/2019 to 12/31/2019

Account Number
416870

Bank of America, N.A.
P.O. Box 2010
Lakewood, NJ 08071

Transaction Activity Summary

Description	Amount
Interest	$136,173.86
Other Transaction Activity	$5,181,818.00

Income and Expense Summary

The Income data is provided for informational purposes only. Regularly scheduled payments are reported in the section. Interest income from products which pay interest only at maturity are not reflected.

Description	Reportable Month-to-Date	Non-Reportable Month-to-Date	Total Income Month-to-Date
Money Market Interest	$136,173.86	$0.00	$136,173.86
TOTAL INCOME AND EXPENSES	$136,173.86	$0.00	$136,173.86

Transaction Activity

Date	CUSIP/Security #	Description	Transaction	Quantity	Price	Net Amount
12/31/2019	1885021142	BANK OF AMERICA N A CERTIFICATE OF DEPOSIT	Maturity	5,181,818	0.00	5,181,818.00
TOTAL TRANSACTION ACTIVITY						$5,181,818.00

Income and Expense Activity

The Income data is provided for informational purposes only. Regular scheduled payments are reported in the section. Interest income from products which pay interest only at maturity are not reflected.

Date	Description	Transaction	Tax Withheld	Reportable	Non-Reportable	Net Amount
12/31/2019	BANK OF AMERICA N A CERTIFICATE OF DEPOSIT	Interest	$0.00	$136,173.86	$0.00	$136,173.86
TOTAL INCOME AND EXPENSE ACTIVITY			$0.00	$136,173.86	$0.00	$136,173.86

Interest income booked
2/24/2020

Client Statement
12/01/2019 to 12/31/2019

Account Number
416870

Bank of America, N.A.
P.O. Box 2010
Lakewood, NJ 08071

Announcements:

USA PATRIOT ACT DISCLOSURE

BANA, like all financial institutions, is required by Federal law to obtain, verify and record information that identifies each customer who opens an account with us. When you open an account, we will ask for your name, address and government-issued identification number and other information that will allow us to form a reasonable belief as to your identity, such as documents that establish legal status.

YOU MAY HAVE NOTICED......
Beginning with your January 2014 statement, some information on your statement has been modified and new fields have been added.
The new fields are:
Acquired (the date of purchase/transfer of the security)
Ticket # (the ticket number assigned to your security on our system of record)
Original Price (the price paid for the security*)
Original Cost Basis (the original value or purchase price of the security*)
  *For transfer in of the security, the information displayed will be limited to the values available to us at the time of the transfer.

Thank you for your business and we look forward to continuing to serve you with your investments.

End of Statement

ATTACHMENT E

Attachment E
Moving King County Residents Forward Pro Forma

Initial Loan Balance	$18,000,000
Interest Rate on LOC	6.00%
Amort Term (Yrs)	20
DSCR (stabilized)	1.96
Net Trans. Costs not available for Rehab	$1,175,661
Minimum Rehab needed ($51K/Unit)	$25,959,000
Total Rehab needed ($65,000/Unit)	$33,085,000
Add'l Capital in 2021 adjusted for infl	$9,576,748

Net Transaction Costs

Legal	$50,000
Misc	$125,000
Underwriting	$216,000
Debt Reserve (6 n	$784,661

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Rental Income	Ave Rent per Unit $1,200															
Lease Revenue	1.00%	$7,329,600	$7,402,896	$7,476,925	$7,551,694	$7,627,211	$7,703,483	$7,780,518	$7,858,323	$7,936,907	$8,016,276	$8,096,438	$8,177,403	$8,259,177	$8,341,769	$8,425,186
Vacancy due to rehab		-$3,371,616	-$2,442,956													
Vacancy	-2.5%	-$98,950	-$123,999	-$186,923	-$188,792	-$190,680	-$192,587	-$194,513	-$196,458	-$198,423	-$200,407	-$202,411	-$204,435	-$206,479	-$208,544	-$210,630
Total Net Rental Income		$3,859,034	$4,835,942	$7,290,002	$7,362,902	$7,436,531	$7,510,896	$7,586,005	$7,661,865	$7,738,484	$7,815,869	$7,894,027	$7,972,968	$8,052,697	$8,133,224	$8,214,557
Expenses	Expense Trend % 3.5%															
Existing Operating Expense	$6,500	$3,308,500	$3,424,298	$3,544,148	$3,668,193	$3,796,580	$3,929,460	$4,066,991	$4,209,336	$4,356,663	$4,509,146	$4,666,966	$4,830,310	$4,999,371	$5,174,349	$5,355,451
Add'l Base Cost	$100	$50,900	$52,682	$54,525	$56,434	$58,409	$60,453	$62,569	$64,759	$67,026	$69,371	$71,799	$74,312	$76,913	$79,605	$82,392
Add'l costs due to structure	$250	$127,250	$131,704	$136,313	$141,084	$146,022	$151,133	$156,423	$161,898	$167,564	$173,429	$179,499	$185,781	$192,283	$199,013	$205,979
Replacement Reserves	$400	$203,600	$210,726	$218,101	$225,735	$233,636	$241,813	$250,276	$259,036	$268,102	$277,486	$287,198	$297,250	$307,654	$318,421	$329,566
Total Expenses		$ 3,690,250	$ 3,819,409	$ 3,953,088	$ 4,091,446	$ 4,234,647	$ 4,382,859	$ 4,536,259	$ 4,695,029	$ 4,859,355	$ 5,029,432	$ 5,205,462	$ 5,387,653	$ 5,576,221	$ 5,771,389	$ 5,973,387
Net Operating Income		168,784	1,016,533	3,336,914	3,271,456	3,201,884	3,128,037	3,049,746	2,966,837	2,879,129	2,786,437	2,688,565	2,585,314	2,476,476	2,361,835	2,241,169
		0.11	0.65	2.13	2.08	2.04	1.99	1.94	1.89	1.83	1.78	1.71	1.65	1.58	1.51	1.43
Debt Payments		($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)	($1,569,322)
Cash flow available for def'd capital needs/(Shortfall)		(1,400,538)	(552,789)	1,767,592	1,702,134	1,632,562	1,558,715	1,480,424	1,397,515	1,309,807	1,217,115	1,119,243	1,015,992	907,154	792,513	671,847
												$9,576,748				
Add'l Capital needs not funded from Debt		$8,743,661							18							
Balance to cover from Cash Flow	3.00%	$10,144,199	$11,001,314	$9,563,761	$8,148,540	$6,760,434	$5,404,533	$4,086,245	$2,811,318	$1,585,850	$416,311	$8,873,816	$7,857,823	$6,950,669	$6,158,156	$5,486,309

bal. outstanding

ATTACHMENT F

Federal Home Loan
Bank Seattle

1001 Fourth Avenue, Suite 2600
Seattle, Washington 98154
206.340.2300   tel
206.340.2485   fax
www.fhlbsea.com

Lending Strength

Advance Confirmation Advice

King County Housing Authority   Transaction Date: 08/26/13
600 Andover Park W   Docket: 99007
Seattle, WA 98188   TPS transaction: 5
                                            Note Number: 11541

Note Number	Current Rate	Advance Type	Principal	Accrual Basis	Requestor
11541	3.97000	AMO	18,000,000.00	ACT/ACT	CONSTANCE
			Principal to Amortize per attached schedule		

Effective Date	Maturity Date	Payment Date(s)			Bus Day Convention
08/26/13	08/26/33	First business day of every month			New York

This advance is granted under the terms of Advance Master Note 1.1.
The details of the advance are specified above and will be considered
accurate and binding unless the Seattle Bank is notified otherwise within
ten (10) business days of the transaction date.

Questions regarding this confirmation may be directed to Member Services
             Seattle   (206) 340-8691
             Toll Free (800) 340-3452

                                              Page Nbr: 1

Federal Home Loan
Bank Seattle

1001 Fourth Avenue, Suite 2600
Seattle, Washington 98154
206.340.2300   tel
206.340.2485   fax
www.fhlbsea.com

Lending Strength

Advance Confirmation Advice

King County Housing Authority
600 Andover Park W
Seattle, WA 98188

Transaction Date: 08/26/13
Docket: 99007
TPS transaction: 5
Note Number: 11541

The Seattle Bank shall charge prepayment fees on advances in the event of any voluntary or involuntary payment of all or part of the principal of such advance prior to the originally scheduled maturity thereof; including without limitation payments that become due as a result of an acceleration by the Seattle Bank pursuant to the terms of the advances agreement between the Seattle Bank and the borrower; provided, however, that a prepayment fee shall not be charged if the advance is terminated by the Seattle Bank at the end of the Initial Lockout Period or as of an Optional Termination Date. All prepayment fees shall be due at the time of the prepayment. The prepayment fee charged will be in an amount, calculated in accordance with the methodology set forth below, that is sufficient to make the Seattle Bank financially indifferent to the borrower's decision to repay the advance prior to its maturity date by enabling the Seattle Bank to obtain approximately the same investment yield that the Seattle Bank would have received had the Seattle Bank received all payments as originally provided in the advance that is being prepaid. The calculations and determinations of the Seattle Bank in this regard shall be in its sole and absolute discretion. Notwithstanding the above and the prepayment fee calculation methodology set forth below, in no event will a prepayment fee be less than zero unless the advance confirmation advice issued in connection with an advance expressly provides otherwise. In addition all prepayments and prepayment fees shall be governed by the provisions of the Seattle Bank's Member Products Policy and Financial Products and Services User Guide.

Prepayment fee calculation methodology: The Seattle Bank will calculate and charge a prepayment fee equal to the present value of the difference between: (i) the scheduled interest payments due in connection with the amount of the advance being prepaid, and (ii) the interest payments due in connection with a Federal Home Loan Bank (FHLBank) debt obligation or instrument, as of the date of the prepayment, of equivalent amount, term to maturity and other provisions as the advance that is being prepaid. The debt obligation or instrument referred to in (ii) above may, at the sole and absolute discretion of the Seattle Bank, be created synthetically via the derivative market for purposes of determining the prepayment fee calculation and need not be actual instrument, debt obligation, consolidated obligation, or liability of the Seattle Bank, another FHLBank or the FHLBank System.

In determining the present value of the difference between (i) and (ii) above, the Seattle Bank will discount the cashflows using the rate(s) on debt obligation or instrument described in (ii). The prepayment fee calculation will also be adjusted, as may be appropriate, to reflect the special financing characteristics of the advance that is being prepaid and (if applicable) any cost to modify, terminate, or offset the hedges associated with the advance (e.g., in the case of a putable advance, the embedded cost of the put option.) In some cases this adjustment will result in interest payments referred to in (ii) above that are lower than those due on FHLBank consolidated obligations or debt obligations of the Seattle Bank with similar terms to maturity, which may produce a higher prepayment fee.

Questions regarding this confirmation may be directed to Member Services
Seattle   (206) 340-8691
Toll Free   (800) 340-3452

Federal Home Loan
Bank Seattle

1001 Fourth Avenue, Suite 2600
Seattle, Washington 98154
206.340.2300   tel
206.340.2485   fax
www.fhlbsea.com

Lending Strength

```
Customer: 99007  King County Housing Authority     Amortizing Schedule
Advance Original Principal:  18,000,000.00          Advance Note Nbr:  11541
Advance term in years:       20
Advance effective date:      08/26/13
```

Payment Date	Principal Payment	Advance Balance
09/2013	12,096.75	17,987,903.25
10/2013	75,000.00	17,912,903.25
11/2013	75,000.00	17,837,903.25
12/2013	75,000.00	17,762,903.25
01/2014	75,000.00	17,687,903.25
02/2014	75,000.00	17,612,903.25
03/2014	75,000.00	17,537,903.25
04/2014	75,000.00	17,462,903.25
05/2014	75,000.00	17,387,903.25
06/2014	75,000.00	17,312,903.25
07/2014	75,000.00	17,237,903.25
08/2014	75,000.00	17,162,903.25
09/2014	75,000.00	17,087,903.25
10/2014	75,000.00	17,012,903.25
11/2014	75,000.00	16,937,903.25
12/2014	75,000.00	16,862,903.25
01/2015	75,000.00	16,787,903.25
02/2015	75,000.00	16,712,903.25
03/2015	75,000.00	16,637,903.25
04/2015	75,000.00	16,562,903.25
05/2015	75,000.00	16,487,903.25
06/2015	75,000.00	16,412,903.25
07/2015	75,000.00	16,337,903.25
08/2015	75,000.00	16,262,903.25
09/2015	75,000.00	16,187,903.25
10/2015	75,000.00	16,112,903.25
11/2015	75,000.00	16,037,903.25
12/2015	75,000.00	15,962,903.25
01/2016	75,000.00	15,887,903.25
02/2016	75,000.00	15,812,903.25
03/2016	75,000.00	15,737,903.25
04/2016	75,000.00	15,662,903.25
05/2016	75,000.00	15,587,903.25
06/2016	75,000.00	15,512,903.25
07/2016	75,000.00	15,437,903.25
08/2016	75,000.00	15,362,903.25
09/2016	75,000.00	15,287,903.25
10/2016	75,000.00	15,212,903.25
11/2016	75,000.00	15,137,903.25
12/2016	75,000.00	15,062,903.25
01/2017	75,000.00	14,987,903.25
02/2017	75,000.00	14,912,903.25
03/2017	75,000.00	14,837,903.25
04/2017	75,000.00	14,762,903.25
05/2017	75,000.00	14,687,903.25
06/2017	75,000.00	14,612,903.25
07/2017	75,000.00	14,537,903.25
08/2017	75,000.00	14,462,903.25

Lending Strength

```
Customer: 99007  King County Housing Authority       Amortizing Schedule
Advance Original Principal:  18,000,000.00            Advance Note Nbr:  11541
Advance term in years:       20
Advance effective date:      08/26/13
```

Payment Date	Principal Payment	Advance Balance
09/2017	75,000.00	14,387,903.25
10/2017	75,000.00	14,312,903.25
11/2017	75,000.00	14,237,903.25
12/2017	75,000.00	14,162,903.25
01/2018	75,000.00	14,087,903.25
02/2018	75,000.00	14,012,903.25
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07/2018	75,000.00	13,637,903.25
08/2018	75,000.00	13,562,903.25
09/2018	75,000.00	13,487,903.25
10/2018	75,000.00	13,412,903.25
11/2018	75,000.00	13,337,903.25
12/2018	75,000.00	13,262,903.25
01/2019	75,000.00	13,187,903.25
02/2019	75,000.00	13,112,903.25
03/2019	75,000.00	13,037,903.25
04/2019	75,000.00	12,962,903.25
05/2019	75,000.00	12,887,903.25
06/2019	75,000.00	12,812,903.25
07/2019	75,000.00	12,737,903.25
08/2019	75,000.00	12,662,903.25
09/2019	75,000.00	12,587,903.25
10/2019	75,000.00	12,512,903.25
11/2019	75,000.00	12,437,903.25
12/2019	75,000.00	12,362,903.25
01/2020	75,000.00	12,287,903.25
02/2020	75,000.00	12,212,903.25
03/2020	75,000.00	12,137,903.25
04/2020	75,000.00	12,062,903.25
05/2020	75,000.00	11,987,903.25
06/2020	75,000.00	11,912,903.25
07/2020	75,000.00	11,837,903.25
08/2020	75,000.00	11,762,903.25
09/2020	75,000.00	11,687,903.25
10/2020	75,000.00	11,612,903.25
11/2020	75,000.00	11,537,903.25
12/2020	75,000.00	11,462,903.25
01/2021	75,000.00	11,387,903.25
02/2021	75,000.00	11,312,903.25
03/2021	75,000.00	11,237,903.25
04/2021	75,000.00	11,162,903.25
05/2021	75,000.00	11,087,903.25
06/2021	75,000.00	11,012,903.25
07/2021	75,000.00	10,937,903.25
08/2021	75,000.00	10,862,903.25

Federal Home Loan
Bank Seattle

1001 Fourth Avenue, Suite 2600
Seattle, Washington 98154
206.340.2300   tel
206.340.2485   fax
www.fhlbsea.com

Lending Strength

```
Customer: 99007  King County Housing Authority        Amortizing Schedule
Advance Original Principal:  18,000,000.00             Advance Note Nbr:  11541
Advance term in years:       20
Advance effective date:      08/26/13
```

Payment Date	Principal Payment	Advance Balance
09/2021	75,000.00	10,787,903.25
10/2021	75,000.00	10,712,903.25
11/2021	75,000.00	10,637,903.25
12/2021	75,000.00	10,562,903.25
01/2022	75,000.00	10,487,903.25
02/2022	75,000.00	10,412,903.25
03/2022	75,000.00	10,337,903.25
04/2022	75,000.00	10,262,903.25
05/2022	75,000.00	10,187,903.25
06/2022	75,000.00	10,112,903.25
07/2022	75,000.00	10,037,903.25
08/2022	75,000.00	9,962,903.25
09/2022	75,000.00	9,887,903.25
10/2022	75,000.00	9,812,903.25
11/2022	75,000.00	9,737,903.25
12/2022	75,000.00	9,662,903.25
01/2023	75,000.00	9,587,903.25
02/2023	75,000.00	9,512,903.25
03/2023	75,000.00	9,437,903.25
04/2023	75,000.00	9,362,903.25
05/2023	75,000.00	9,287,903.25
06/2023	75,000.00	9,212,903.25
07/2023	75,000.00	9,137,903.25
08/2023	75,000.00	9,062,903.25
09/2023	75,000.00	8,987,903.25
10/2023	75,000.00	8,912,903.25
11/2023	75,000.00	8,837,903.25
12/2023	75,000.00	8,762,903.25
01/2024	75,000.00	8,687,903.25
02/2024	75,000.00	8,612,903.25
03/2024	75,000.00	8,537,903.25
04/2024	75,000.00	8,462,903.25
05/2024	75,000.00	8,387,903.25
06/2024	75,000.00	8,312,903.25
07/2024	75,000.00	8,237,903.25
08/2024	75,000.00	8,162,903.25
09/2024	75,000.00	8,087,903.25
10/2024	75,000.00	8,012,903.25
11/2024	75,000.00	7,937,903.25
12/2024	75,000.00	7,862,903.25
01/2025	75,000.00	7,787,903.25
02/2025	75,000.00	7,712,903.25
03/2025	75,000.00	7,637,903.25
04/2025	75,000.00	7,562,903.25
05/2025	75,000.00	7,487,903.25
06/2025	75,000.00	7,412,903.25
07/2025	75,000.00	7,337,903.25
08/2025	75,000.00	7,262,903.25

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Lending Strength

Customer: 99007 King County Housing Authority   Amortizing Schedule
Advance Original Principal: 18,000,000.00   Advance Note Nbr: 11541
Advance term in years: 20
Advance effective date: 08/26/13

Payment Date	Principal Payment	Advance Balance
09/2025	75,000.00	7,187,903.25
10/2025	75,000.00	7,112,903.25
11/2025	75,000.00	7,037,903.25
12/2025	75,000.00	6,962,903.25
01/2026	75,000.00	6,887,903.25
02/2026	75,000.00	6,812,903.25
03/2026	75,000.00	6,737,903.25
04/2026	75,000.00	6,662,903.25
05/2026	75,000.00	6,587,903.25
06/2026	75,000.00	6,512,903.25
07/2026	75,000.00	6,437,903.25
08/2026	75,000.00	6,362,903.25
09/2026	75,000.00	6,287,903.25
10/2026	75,000.00	6,212,903.25
11/2026	75,000.00	6,137,903.25
12/2026	75,000.00	6,062,903.25
01/2027	75,000.00	5,987,903.25
02/2027	75,000.00	5,912,903.25
03/2027	75,000.00	5,837,903.25
04/2027	75,000.00	5,762,903.25
05/2027	75,000.00	5,687,903.25
06/2027	75,000.00	5,612,903.25
07/2027	75,000.00	5,537,903.25
08/2027	75,000.00	5,462,903.25
09/2027	75,000.00	5,387,903.25
10/2027	75,000.00	5,312,903.25
11/2027	75,000.00	5,237,903.25
12/2027	75,000.00	5,162,903.25
01/2028	75,000.00	5,087,903.25
02/2028	75,000.00	5,012,903.25
03/2028	75,000.00	4,937,903.25
04/2028	75,000.00	4,862,903.25
05/2028	75,000.00	4,787,903.25
06/2028	75,000.00	4,712,903.25
07/2028	75,000.00	4,637,903.25
08/2028	75,000.00	4,562,903.25
09/2028	75,000.00	4,487,903.25
10/2028	75,000.00	4,412,903.25
11/2028	75,000.00	4,337,903.25
12/2028	75,000.00	4,262,903.25
01/2029	75,000.00	4,187,903.25
02/2029	75,000.00	4,112,903.25
03/2029	75,000.00	4,037,903.25
04/2029	75,000.00	3,962,903.25
05/2029	75,000.00	3,887,903.25
06/2029	75,000.00	3,812,903.25
07/2029	75,000.00	3,737,903.25
08/2029	75,000.00	3,662,903.25

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Lending Strength

Customer: 99007   King County Housing Authority   Amortizing Schedule
Advance Original Principal: 18,000,000.00   Advance Note Nbr: 11541
Advance term in years: 20
Advance effective date: 08/26/13

Payment Date	Principal Payment	Advance Balance
09/2029	75,000.00	3,587,903.25
10/2029	75,000.00	3,512,903.25
11/2029	75,000.00	3,437,903.25
12/2029	75,000.00	3,362,903.25
01/2030	75,000.00	3,287,903.25
02/2030	75,000.00	3,212,903.25
03/2030	75,000.00	3,137,903.25
04/2030	75,000.00	3,062,903.25
05/2030	75,000.00	2,987,903.25
06/2030	75,000.00	2,912,903.25
07/2030	75,000.00	2,837,903.25
08/2030	75,000.00	2,762,903.25
09/2030	75,000.00	2,687,903.25
10/2030	75,000.00	2,612,903.25
11/2030	75,000.00	2,537,903.25
12/2030	75,000.00	2,462,903.25
01/2031	75,000.00	2,387,903.25
02/2031	75,000.00	2,312,903.25
03/2031	75,000.00	2,237,903.25
04/2031	75,000.00	2,162,903.25
05/2031	75,000.00	2,087,903.25
06/2031	75,000.00	2,012,903.25
07/2031	75,000.00	1,937,903.25
08/2031	75,000.00	1,862,903.25
09/2031	75,000.00	1,787,903.25
10/2031	75,000.00	1,712,903.25
11/2031	75,000.00	1,637,903.25
12/2031	75,000.00	1,562,903.25
01/2032	75,000.00	1,487,903.25
02/2032	75,000.00	1,412,903.25
03/2032	75,000.00	1,337,903.25
04/2032	75,000.00	1,262,903.25
05/2032	75,000.00	1,187,903.25
06/2032	75,000.00	1,112,903.25
07/2032	75,000.00	1,037,903.25
08/2032	75,000.00	962,903.25
09/2032	75,000.00	887,903.25
10/2032	75,000.00	812,903.25
11/2032	75,000.00	737,903.25
12/2032	75,000.00	662,903.25
01/2033	75,000.00	587,903.25
02/2033	75,000.00	512,903.25
03/2033	75,000.00	437,903.25
04/2033	75,000.00	362,903.25
05/2033	75,000.00	287,903.25
06/2033	75,000.00	212,903.25
07/2033	75,000.00	137,903.25
08/2033	75,000.00	62,903.25

Federal Home Loan
Bank Seattle

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Seattle, Washington 98154
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Lending Strength

Customer: 99007   King County Housing Authority   Amortizing Schedule
Advance Original Principal: 18,000,000.00   Advance Note Nbr: 11541
Advance term in years: 20
Advance effective date: 08/26/13

Payment Date	Principal Payment	Advance Balance
Final	62,903.25	0.00

ATTACHMENT G

Attachment G

MOVING KING COUNTY RESIDENTS FORWARD COLLATERAL CERTIFICATION

I, Craig Violante, Director of Finance for the King County Housing Authority (KCHA), do hereby certify that whenever the minimum collateral balance requirement of the "MKCRF" loan between KCHA and the Federal Home Loan Bank declines and investments purchased with MTW funds that are pledged as collateral against this loan are de-pledged, any released funds will be used for an eligible MTW activity or purpose that KCHA has received approval for through its MTW Plan. This loan was used to finance rehabilitation projects at 509 former public housing units disposed of by KCHA and now owned by Moving King County Residents Forward (MKCRF).

_____   _____2/28/2020_____

Craig Violante, Director of Finance,   Date
King County Housing Authority

ATTACHMENT H

Attachment H

Below is the current outstanding amount borrowed by the King County Housing Authority (KCHA) from the Federal Home Loan Bank (FHLB) and then loaned to Moving King County Residents Forward (MKCRF):

100% of the Total FHLB Indebtedness of $12,212,903.25 must be collateralized by KCHA.

First KCHA pledged the loan between KCHA and MKCRF. This loan currently has an outstanding balance of $14,413,430.24 but is assigned a market value of $13,940,972.41. Its Advance Equivalent is 68.2% of the market value, or $9,513,319.57.

Collateral Summary

Data Updated: 02-27-2020 3:43 PM
APSA Date: 04-13-2015
Collateral Status: Delivery APSA

Loans Pledged

Collateral Type	Unpaid Principal	Market Value / Adjusted Unpaid	Adv Equivalent	# of Items	LTV
1109 Multi-Family 1st Mtg	$14,413,430.24	$13,940,972.41	$9,513,319.57	1	68
Total Loans Pledged:	$14,413,430.24	$13,940,972.41	$9,513,319.57	1	

Export Loans Pledged

As the minimum collateral requirement is $12,212,903.25 and the Advance Equivalent of the collateralized loan is $9,513,319.57, there is a collateral gap of $2,699,583.68. To fill this gap, KCHA pledged investments purchased with MTW funds. For these investments, the FHLB calculated the Advance Equivalent to be 92% of the Fair Market

Value. At 12/31/2019, the Fair Market Value of the investments was $5,005,054.60 and the Advance Equivalent $4,604,650.23. The table shows the inventory of pledged investments.

Securities

Collateral Type	Unpaid Principal	Market Value	Adv Equivalent	# of Items	LTV
6010 Agency Debt-Discount Note/Debenture	$5,000,000.00	$5,005,054.60	$4,604,650.23	5	92
Total Securities/Term Time Pledged:	**$5,000,000.00**	**$5,005,054.60**	**$4,604,650.23**	**5**	

Securities/Term Time Pledged (?)

The Advance Equivalent of $4,604,650.23 exceeds the collateral gap of $2,699,583.68. KCHA considers the amount of MTW funds pledged as collateral to be equal to the collateral gap, or $2,699,583.68.

APPENDIX F
ENERGY PERFORMANCE CONTRACT REPORT

2020 - EPC I Extension: Savings by Incentive Type

AMP	Property Name	Units	Frozen	RPUI	Total Savings by AMP	Total Savings by AMP per Unit
101	Ballinger Homes	140	$ 145,079	$ -	$ 145,079	$ 1,036
150	Paramount House	70	$ 25,914	$ -	$ 25,914	$ 370
152	Briarwood & Lake House	140	$ 181,500	$ -	$ 181,500	$ 1,296
153	Northridge I & Northridge II	140	$ 138,878	$ -	$ 138,878	$ 992
201	Forest Glen	40	$ 19,334	$ -	$ 19,334	$ 483
203	College Place & Eastside Terrace	101	$ 193,630	$ -	$ 193,630	$ 1,917
251	Casa Juanita	80	$ 103,610	$ -	$ 103,610	$ 1,295
350	Boulevard Manor	70	$ 66,880	$ -	$ 66,880	$ 955
352	Munro Manor & Yardley Arms	127	$ 93,854	$ -	$ 93,854	$ 739
354	Brittany Park & Riverton Terrace	105	$ 216,616	$ -	$ 216,616	$ 2,063
401	Valli Kee	115	$ 210,073	$ -	$ 210,073	$ 1,827
403	Cascade Apartments	108	$ 163,328	$ -	$ 163,328	$ 1,512
450	Mardi Gras	61	$ 47,210	$ -	$ 47,210	$ 774
503	Firwood Circle	50	$ 44,956	$ -	$ 44,956	$ 899
504	Burndale Homes	50	$ 43,513	$ -	$ 43,513	$ 870
550	Gustaves Manor & Wayland Arms	102	$ 37,258	$ -	$ 37,258	$ 365
551	Plaza Seventeen	70	$ 26,411	$ -	$ 26,411	$ 377
552	Southridge House	80	$ 90,336	$ -	$ 90,336	$ 1,129
553	Casa Madrona	70	$ 90,130	$ -	$ 90,130	$ 1,288
	Total	1,719	$ 1,938,510	$ -	$ 1,938,510	

2020 - EPC II: Savings by Incentive Type

AMP	Property Name	Units	Frozen	RPUI	Total Savings by AMP	Total Savings by AMP per Unit
101	Ballinger Homes (RPUI Only) & Peppertree	140	$ 16,594	$ 221,554	$ 238,149	$ 1,701
105	Park Royal	23	$ 9,129	$ 11,492	$ 20,621	$ 897
150	Paramount House	70	$ 4,469	$ 33,918	$ 38,387	$ 548
152	Briarwood & Lake House	140	$ -	$ 114,289	$ 114,289	$ 816
153	Northridge I & Northridge II	140	$ 2,676	$ 125,359	$ 128,035	$ 915
156	Westminster	60	$ 15,211	$ -	$ 15,211	$ 254
180	Brookside Apartments	16	$ 12,632	$ -	$ 12,632	$ 790
191	Northwood	34	$ 20,513	$ 16,338	$ 36,851	$ 1,084
201	Forest Glen	40	$ -	$ 42,747	$ 42,747	$ 1,069
203	College Place & Eastside Terrace	101	$ -	$ 150,315	$ 150,315	$ 1,488
210	Kirkland Place	9	$ 3,327	$ 3,804	$ 7,131	$ 792
213	Island Crest	17	$ 17,551	$ 7,802	$ 25,353	$ 1,491
251	Casa Juanita	80	$ (902)	$ -	$ (902)	$ (11)
290	NorthLake House	38	$ 23,285	$ 12,182	$ 35,467	$ 933
344	Zephyr	25	$ 17,782	$ 7,579	$ 25,362	$ 1,014
345	Sixth Place	24	$ -	$ 25,731	$ 25,731	$ 1,072
350	Boulevard Manor	70	$ -	$ 58,106	$ 58,106	$ 830
352	Munro Manor & Yardley Arms	127	$ (1,788)	$ 88,832	$ 87,044	$ 685
354	Brittany Park, Riverton Terrace, & Pacific Court	105	$ 30,535	$ 46,265	$ 76,800	$ 731
390	Burien Park	102	$ 112,192	$ 24,374	$ 136,566	$ 1,339
401	Valli Kee	115	$ 45,122	$ 111,609	$ 156,731	$ 1,363
403	Cascade Apartments	108	$ -	$ 146,518	$ 146,518	$ 1,357
409	Shelcor	8	$ 434	$ 2,937	$ 3,371	$ 421
450	Mardi Gras	61	$ 11,353	$ 29,468	$ 40,821	$ 669
467	Northwood Square	24	$ -	$ -	$ -	$ -
503	Firwood Circle	50	$ 34,242	$ 41,132	$ 75,374	$ 1,507
504	Burndale Homes	50	$ 28,376	$ 53,212	$ 81,588	$ 1,632
550	Gustaves Manor & Wayland Arms	102	$ 4,184	$ 33,982	$ 38,166	$ 374
551	Plaza Seventeen	70	$ 11,399	$ -	$ 11,399	$ 163
552	Southridge House	80	$ 11,623	$ 18,242	$ 29,864	$ 373
553	Casa Madrona	70	$ 3,404	$ 38,991	$ 42,395	$ 606
	Total	2,099	$ 433,344	$ 1,466,778	$ 1,900,123	