

How Do We Know It's Affordable? Understanding Community Benefits & Integrated Planning

Scott Bernstein, Founder

Center for Neighborhood Technology at the
ACEEE EER 2019 Energy-Water Panel

October 17, 2019

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Innovations laboratory for urban sustainability

Our goal is to advance urban sustainability and shared prosperity through initiatives in transportation, water, climate resilience, and public policy. We coach city leaders, advise decision makers, and find new ways to solve challenges, and we help communities capture the value of such investments.

This Presentation Will:



Distinguish between public investments that are **systems benefit** versus **community benefit** oriented



Share lessons from engagement in Flint and other economically challenged cities



Place the current choices facing cities on water infrastructure in an **integrated community benefits-** context



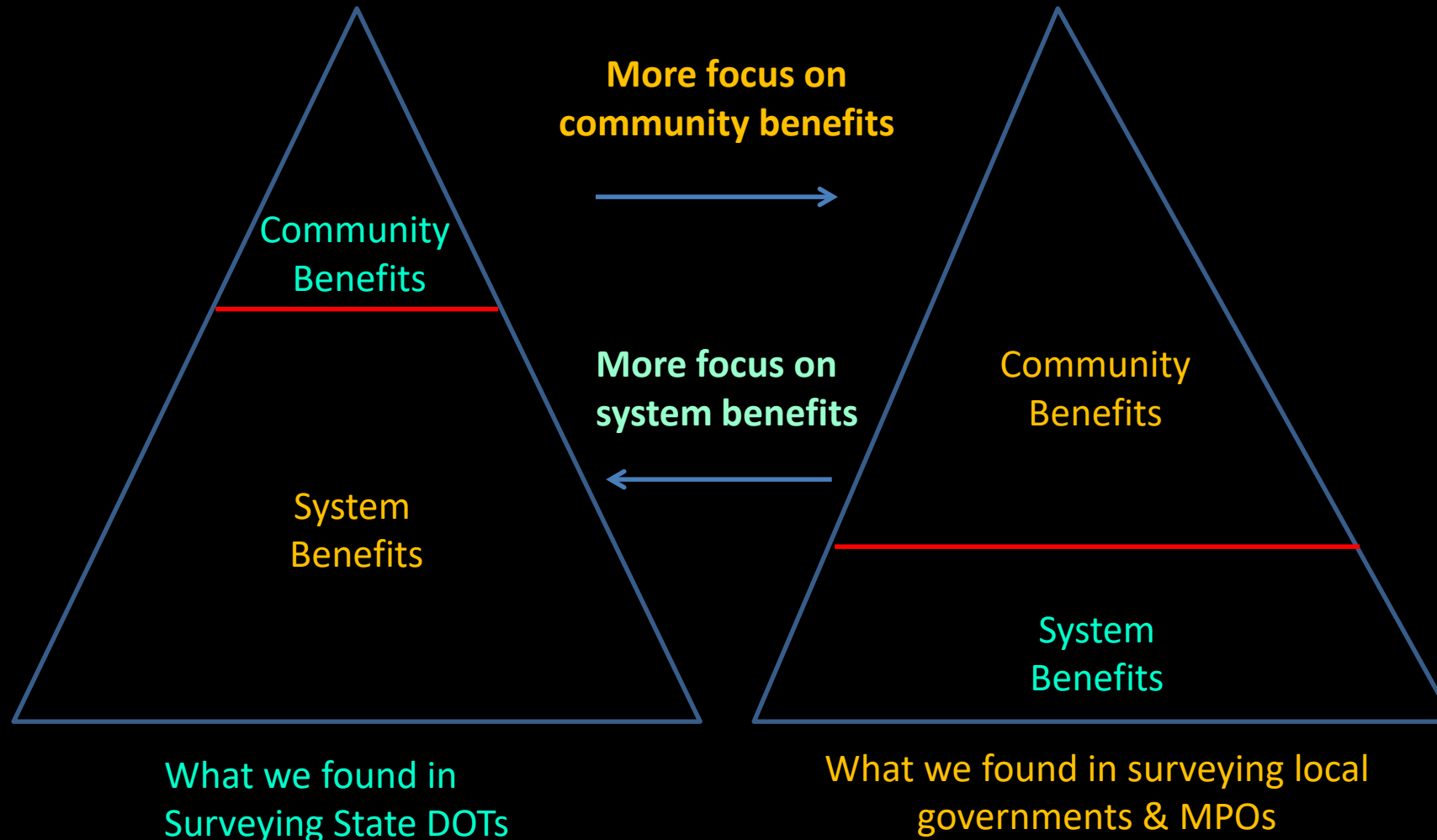
Identify a set of emerging opportunities in cities to support **accelerated action**



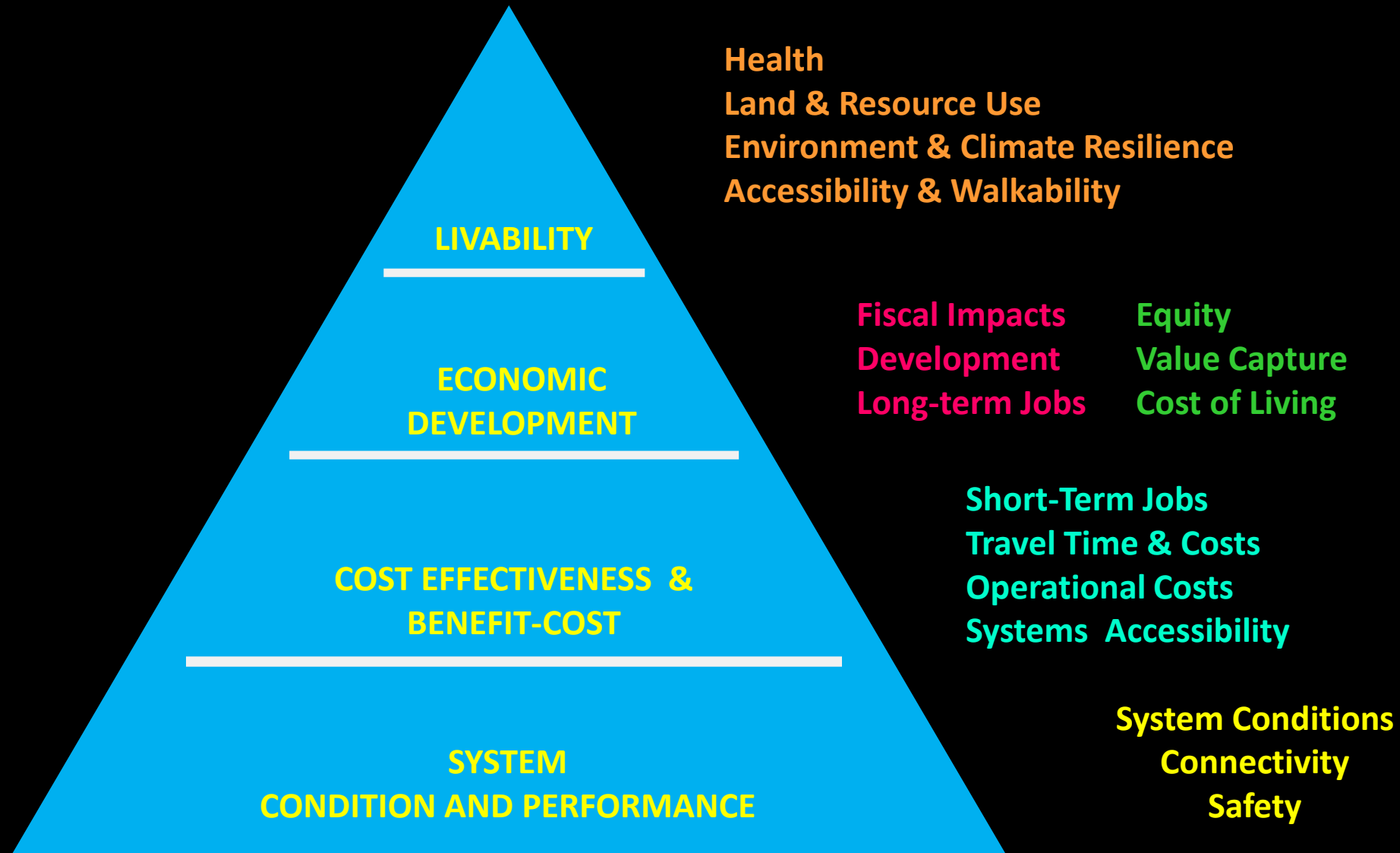
Frame up a discussion for potential roles for cities, communities and others in pursuing such visions

How to Think About Public Investing— System vs. Community Benefits Choices

Big Systems and Small Places—Two Views, How Incumbent Institutions That Manage “Infrastructure” Judge Their Performance



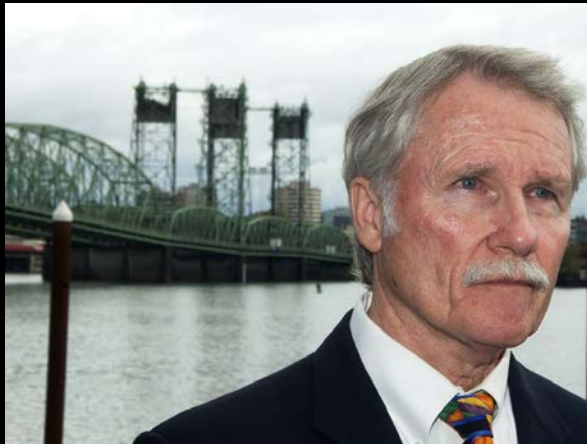
Aiming for Balanced Investment Outcomes



FIX IT FIRST OR BUY SOMETHING BETTER?

“As governments, we’re on the hook to maintain core legacy infrastructure including roads, bridges, water, and sewers... But then there’s the infrastructure we’re turned on about... Mass transit, more complete streets, clean energy economy, broadband, smart grid and green infrastructure...”

- Oregon Governor John Kitzhaber, June 2012



RAISE WAGES OR CUT THE COST OF LIVING?

“I won’t live long enough to see the Memphis poverty rate cut from 27% to the southern average of 17% from workforce initiatives alone. We need to do what we can, together, to cut the cost of living”

Memphis Mayor A. C. Wharton, 2014

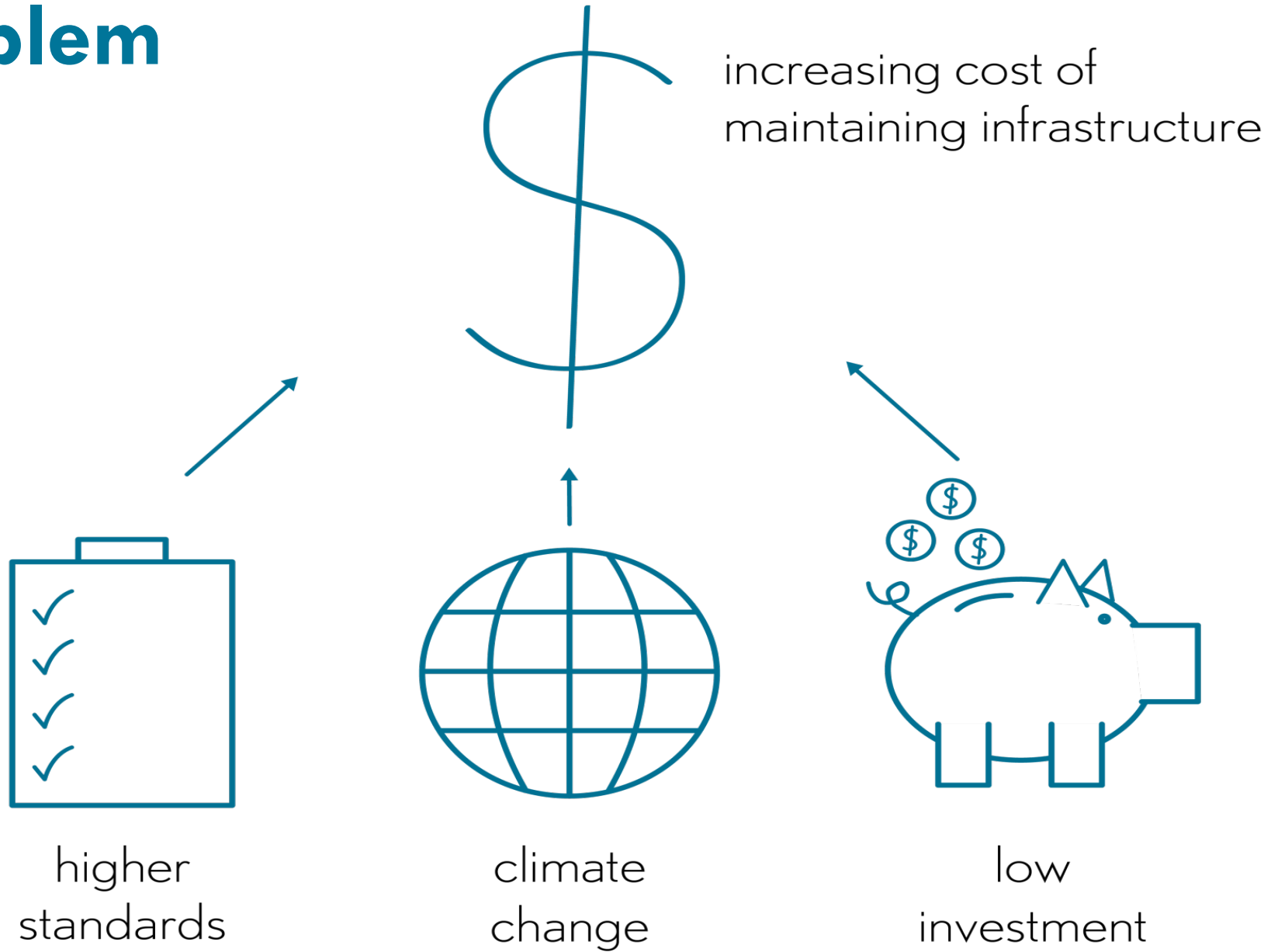


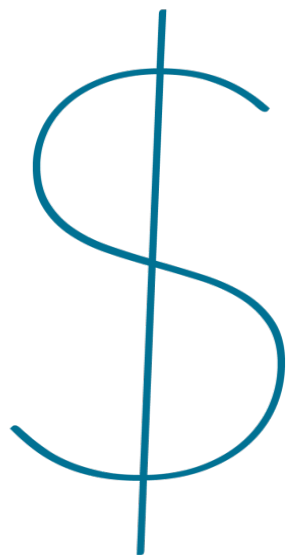
Lessons from Flint MI

CNT's Great Lakes Water Infrastructure Project is working with Great Lakes communities to help them innovate on their water system needs to provide clean, affordable, and sustainable water.

Here are some takeaways from this work.

The Problem





decreasing
agency
budgets



weak markets

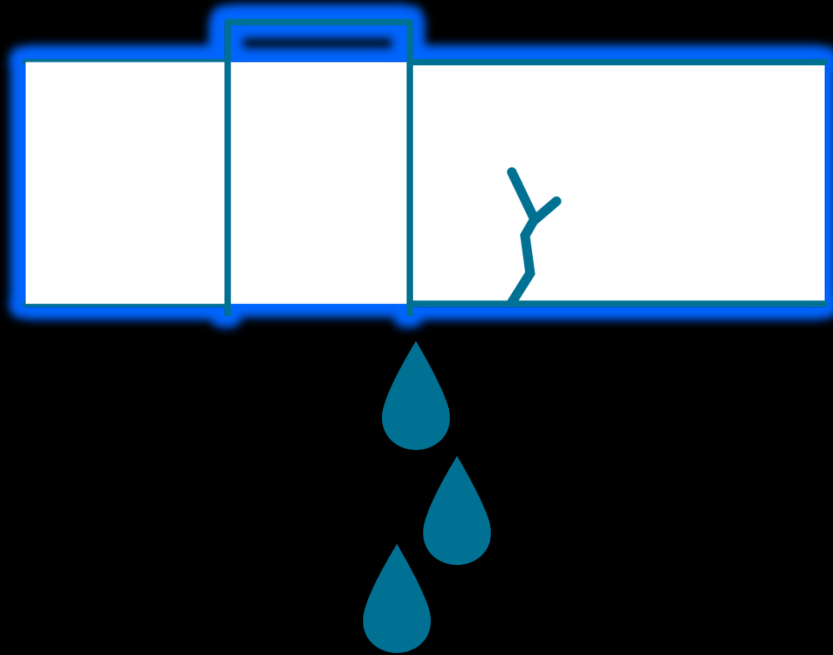


fewer ratepayers



lower incomes

If costs for water and sewer services increase to finance the billions of dollars of infrastructure investment needed, how do utilities ensure affordability throughout their service area?



Aging Infrastructure



Increased burden on families + businesses

Flint + CNT Partnership for Resilient Water Infrastructure



A series of conversations and a 3-day workshop with city staff and community leaders aimed at identifying strategic near, medium, and long-term action steps that further community and water affordability goals.

What Happened in Flint



The Problem

- City bankruptcy
- State assigns Emergency Manager
- To save costs, orders city to switch water source from Detroit to Flint River...a lead-poisoning machine
- Triggers citizen science, TA, organizing, leadership...

Leading to System + Community actions

- Lead service line replacement
- Health action supported by massive funder action
- “Coming clean” on the real cost of infrastructure
- Willingness to rethink public investment in a disinvested community

Flint Community Context

Smaller Population Paying for Water System



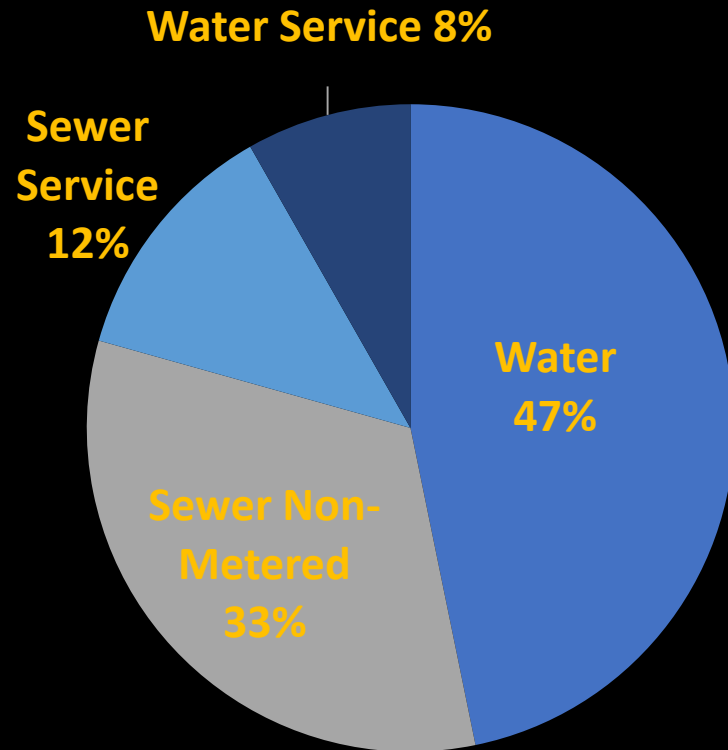
| 1960 Population | 2016 Population | 2016 Median Annual Household Income | 2016 Poverty Rate |
|-----------------|---------------------|-------------------------------------|-------------------|
| 196,940 | 99,918 | \$25,650 | 42% |
| (197% of 2016) | (31,205 households) | | (59% of children) |

Flint Community Context

Your "Water" Bill today



We analyzed a quarter's worth of actual monthly 2018 bills, **not past due bills**
Not including relief credits, average bill is \$110/month



Less than half of what you're charged for goes to "water"
The rest goes to pay for hardware & maintenance *aka* "infrastructure"

THIS PORTION FOR YOUR RECORDS

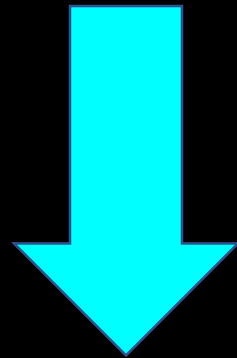
| CONS | SERVICE | CHARGE | Previous Balance | |
|------|----------------------|--------|------------------|------------|
| 20 | Meter Change | 0.00 | 19.12 | |
| | Sewer Non-metered | 90.51 | Payments | -20.00 |
| | Sewer Svc Chrg | 34.48 | Adjustments | 0.00 |
| | Water | 129.99 | Current Penalty | 0.00 |
| | Water Svc Chrg | 22.90 | New Charges | 178.51 |
| | WATER SVC CHRG-MI CR | -14.88 | Total Due | 177.63 |
| | WATER-MI CR | -84.49 | Due Date | 01/11/2017 |

PENALTY ASSESSED 30 DAYS AFTER DUE

Poverty Reduction is a Two-Sided Coin



Expenses



Economic
Success



Incomes

**Which Tells Us How the Economy Can
Cut Unemployment While
Poverty Soared**

Water Affordability vs Community Affordability



EPA defines an affordable water and sewer bill as one that makes up no more than 4.5% of total monthly income

The average Flint monthly water and sewer bill is \$110; the annual monthly income is \$2,138; **the bill burden is 5%**

HOWEVER, 25% of Flint residents make less than \$15,000/year or \$1,250/month; **the bill burden grows to about 9%**

Neither calculation factors in the other critical monthly expenses that families pay for – transportation, housing, utilities

How Do We Get a Better Bill?



1. Improve rate payer assistance programs and customer service
2. Lower costs by developing residential energy & water efficiency programs
3. Engage Flint Institutions as partners in water system improvements
4. Invest in energy efficiency retrofits to Flint's and Great Lakes Water Authority's water systems
5. Catching raindrops where they fall and putting them to use with a rainwater harvesting program
6. Manage water and wastewater utility upgrades in a way that create, capture, and deliver community benefits in a streamlined way

1. Improve customer service and rate payer assistance programs

- Set annual goals for water affordability across the entire customer base
- Redefine assistance to include both relief credits and efficiency
- Make financial counseling widely available and geared to the goal



Graduates of the Equity Express Training Program for Financial Counseling in Chicago



Customer reviewing improved utility bill that shows how they are doing compared to similar customers

Example: Your Water Bill Tomorrow

- Modern meters-readable
- Bills that tell your story
- Help track progress
- Personalized info
- Provide direct access if extra financial help is needed

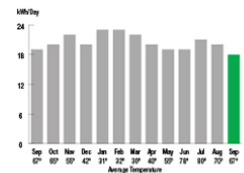
Eversource Sample Residential Bill

Front Side

EVERSOURCE

Account Number: 1234 567 8900
Statement Date: 09/30/16
John J Customer
123 Any St
Any Town, CT 00000

Electric Usage History - Kilowatt Hours (kWh)



Electric Usage Summary

This month your average daily electric use was 25 kWh. This is 4% less than the same time last year.

Total Amount Due by 10/28/16 **\$151.00**

Amount Due On 09/26/16 \$168.00
Last Payment Received On 09/23/16 -\$168.00
Balance Forward \$0.00
Total Current Charges \$151.00

Current Charges for Electricity

| | |
|--|--|
| Supply \$69.93 <small>Cost of electricity from Any Energy Co.</small> | Delivery \$81.07 <small>Cost to deliver electricity by Eversource</small> |
|--|--|

Supply Information

System Rate: 9.990c/kWh Fixed
Term: 13 cycles
Expiration: Dec 2016 (meter read)
Next Cycle Rate: 9.990c/kWh
Cancellation Fee: \$0
Standard Service Rate: 6.606c/kWh
Term/Expiration: 6 mos until Dec 31, 2016
Your Supplier Charge: \$69.93
Standard Service Comparison: \$46.24

Your electric supplier is
Any Energy Company
Any Street
Any Town, Any State 00000
1-100-000-0000
To return to Standard Service, visit CT's official Rate Board at www.EnergyRateBoard.com, Eversource.com or call 1-800-298-2000

1 Summary Information

- Supplier rate, term & expiration
- Cancellation fee & next cycle rate
- Standard Service rate & term
- Comparison of what you would have paid on Standard Service

Back Side

2 Personal Information

- Account number and name key
- Eversource - Service Reference Number

3 Meter Read Date

EVERSOURCE

Account Number: 1234 567 8900
Customer name key: CUST
John J Customer
123 Any St
Any Town, CT 00000

Service reference: 100000000 Billing Cycle: 01
Service from 09/26/16 - 10/24/16 28 Days
Next read date on or about: Oct 25, 2016

| Meter Number | Current Read | Previous Read | Current Usage | Reading Type |
|--------------|--------------|---------------|---------------|--------------|
| 1234567 | 79765 | 79165 | 600 | Actual |

Supply Rate

| | |
|-----------|------|
| Deliv kWh | 0.15 |
|-----------|------|

Total Amount Due by 10/28/16 **\$151.00**

Electric Account Summary

| | |
|-----------------------------------|-----------|
| Amount Due On 09/26/16 | \$168.00 |
| Last Payment Received On 09/23/16 | -\$168.00 |
| Balance Forward | \$0.00 |
| Current Charges/Credits | |
| Electricity Supply Services | \$69.93 |
| Delivery Services | \$81.07 |
| Total Current Charges | \$151.00 |
| Total Amount Due | \$151.00 |

Total Charges for Electricity

| | | |
|-------------------------------|-------------------|---------|
| Supplier (Any Energy Company) | 700 kWh X 0.09990 | \$69.93 |
| Generation Svc Chrg** | | |
| Subtotal Supply Services | | \$69.93 |

2. Develop and use residential energy & water efficiency programs

Market in combination
with other
affordability efforts

Includes retrofits and
installation to achieve
lower consumption of
both water and of
energy (natural gas
and electricity) to
lower bills

Marketed and
managed as a one-
stop shop- partnership
includes the City of
Flint but operates as a
separate non-profit
organization

WaterSense® labeled homes are
designed to use less water!



Efficient distribution systems
get hot water to the tap fast
so you save more time,
water, and energy.



WaterSense
labeled
fixtures ensure
efficiency and
performance.

High-performing
landscapes are
low-maintenance
and save water.



www.epa.gov/watersense/new_homes

3. Engage Flint institutions as partners in water system improvements

Flint's largest institutions (GMC, Colleges, Hospitals, Huntington Bank, the City) are also its largest water users



Engage them in the broad effort for water affordability

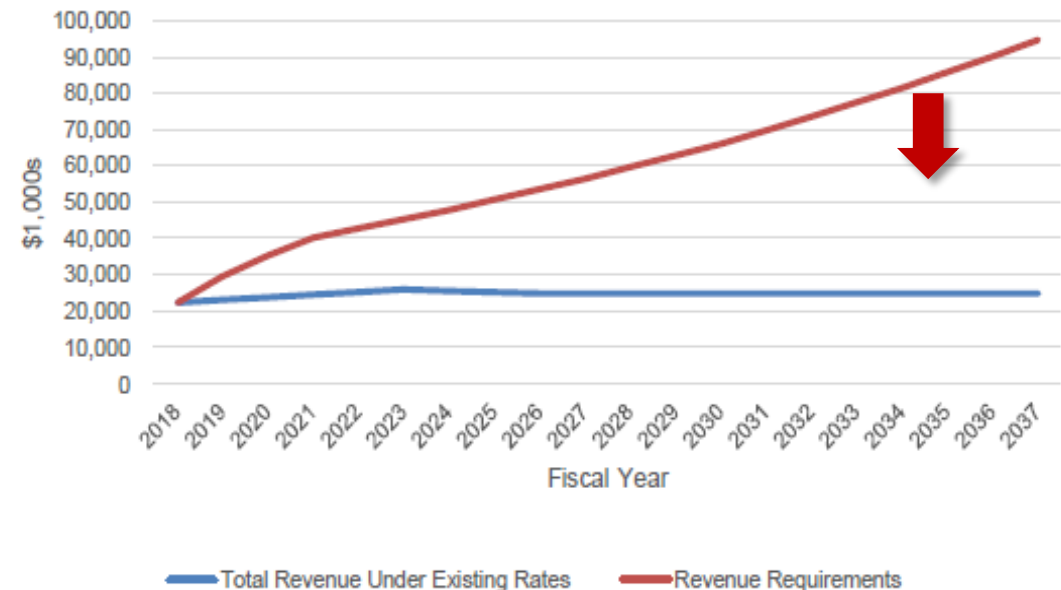


4. Invest in energy efficiency retrofits to Flint's & and to the Great Lakes Water Authority's water systems



Water and sewerage are among the highest energy users in the city, contributes to unnecessarily high costs reflected in your high rates

More efficient equipment is available, and the infrastructure can be redesigned and “right-sized” over time to lower the cost of expected infrastructure upgrades

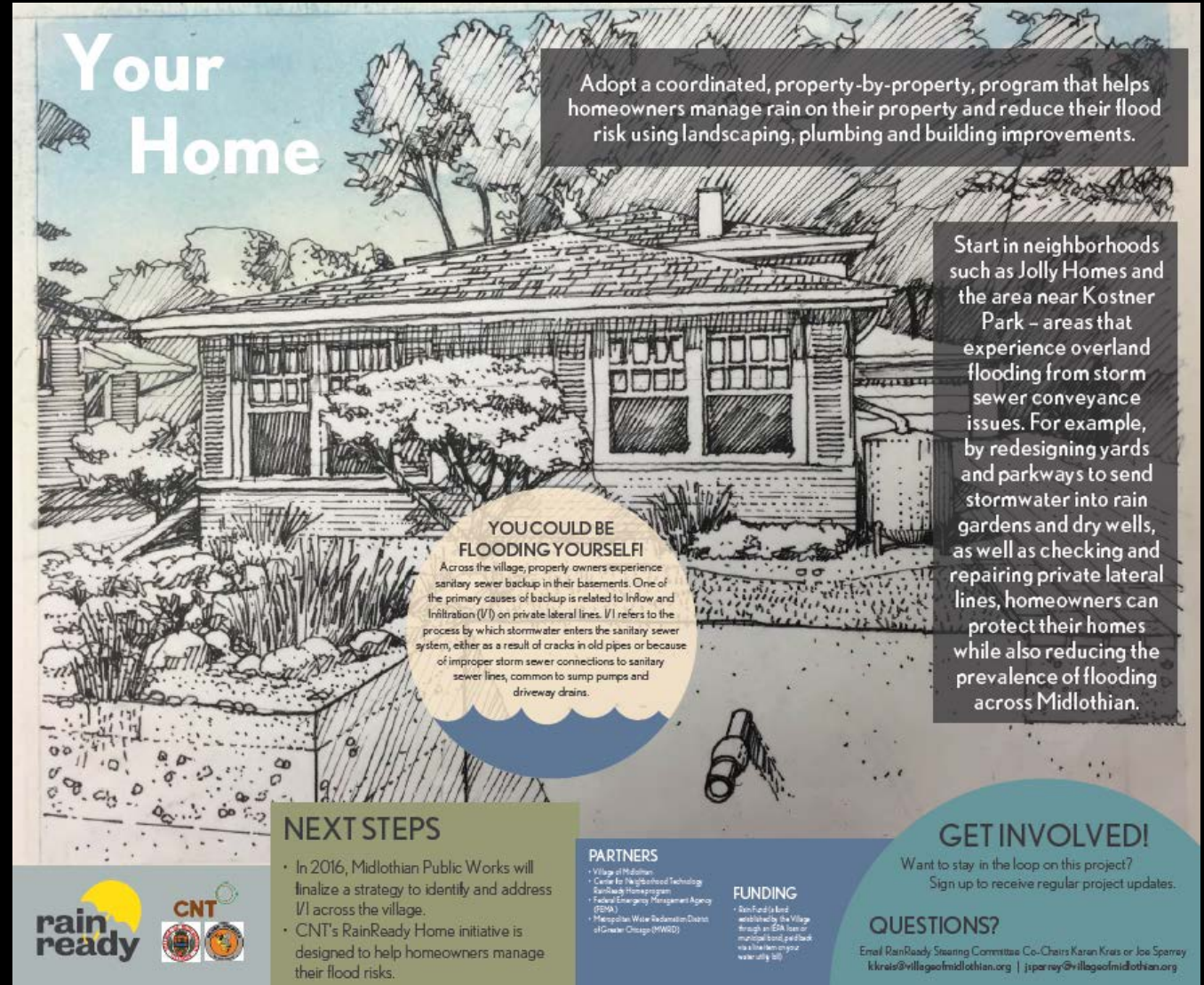


5. Implement a rainwater harvesting program

Flint receives 31 inches of rain and another 5 inches equivalent from snow annually, more water than is treated and pumped

Substitute rainwater for purchased city water to save money at the system- and home-scales

Rainwater is currently a waste product labeled “runoff” and contributes to the high load of sewage and increasingly to flooding



Your Home

Adopt a coordinated, property-by-property, program that helps homeowners manage rain on their property and reduce their flood risk using landscaping, plumbing and building improvements.

Start in neighborhoods such as Jolly Homes and the area near Kostner Park – areas that experience overland flooding from storm sewer conveyance issues. For example, by redesigning yards and parkways to send stormwater into rain gardens and dry wells, as well as checking and repairing private lateral lines, homeowners can protect their homes while also reducing the prevalence of flooding across Midlothian.

YOU COULD BE FLOODING YOURSELF!
Across the village, property owners experience sanitary sewer backup in their basements. One of the primary causes of backup is related to Inflow and Infiltration (I/I) on private lateral lines. I/I refers to the process by which stormwater enters the sanitary sewer system, either as a result of cracks in old pipes or because of improper storm sewer connections to sanitary sewer lines, common to sump pumps and driveway drains.

NEXT STEPS

- In 2016, Midlothian Public Works will finalize a strategy to identify and address I/I across the village.
- CNT's RainReady Home initiative is designed to help homeowners manage their flood risks.

PARTNERS



- Village of Midlothian
- Center for Neighborhood Technology
- Sanitary Sewer Program
- Federal Emergency Management Agency (FEMA)
- Metropolitan Water Reclamation District of Greater Chicago (MWRD)

FUNDING

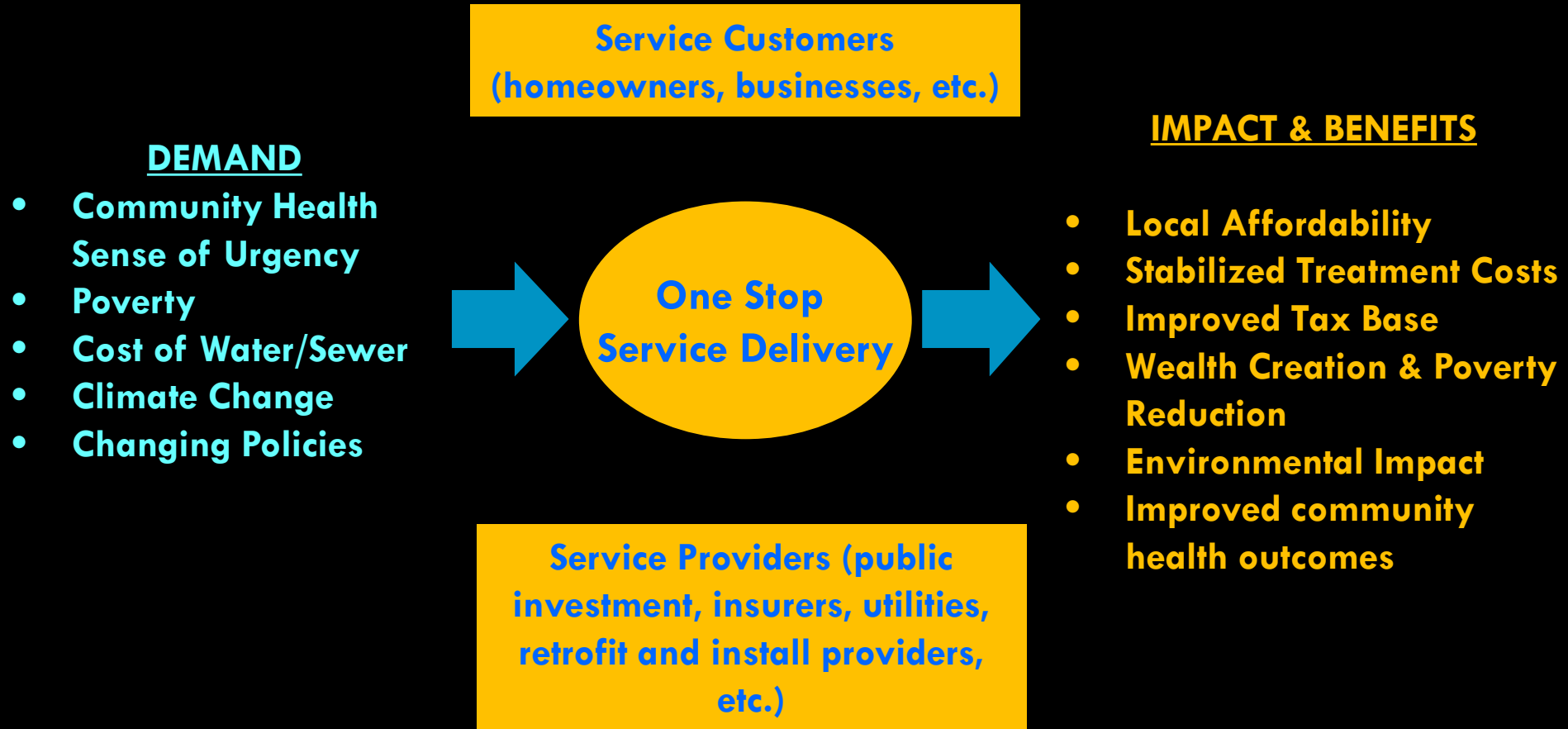
- A portion of the Village's 2016-2017 Capital Budget is allocated to the Village through an EPA loan of municipal bond proceeds to the Village.

GET INVOLVED!
Want to stay in the loop on this project?
Sign up to receive regular project updates.

QUESTIONS?
Email RainReady Steering Committee Co-Chairs Karan Krats or Joe Sparrey
kkrats@villageofmidlothian.org | jsparrey@villageofmidlothian.org



6. A Streamlined Approach to Water and Community Affordability Service Delivery



Thinking Ahead in Ohio

Redefining Affordability

Leveraging Affordability to
Achieve Deeper Community
Benefits

A Decade of Stale Incomes, Rising Costs

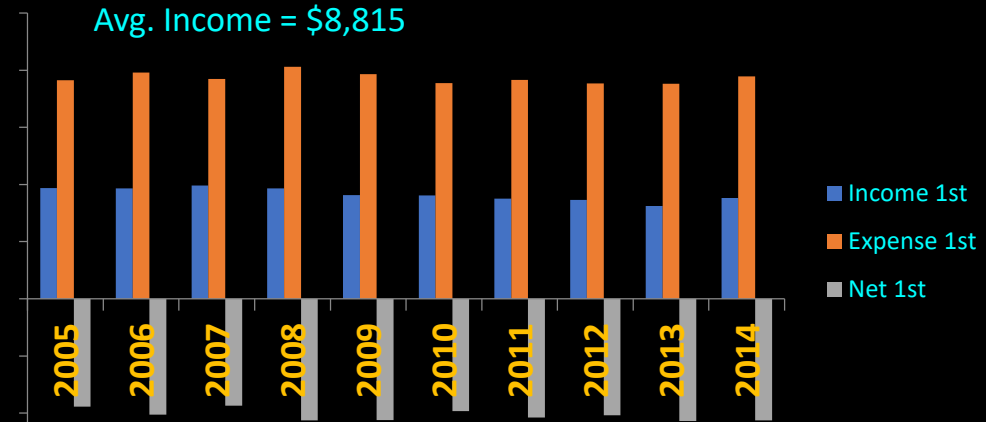
High, persistent and prevalent poverty

Cost of living exceeds growth in expenses

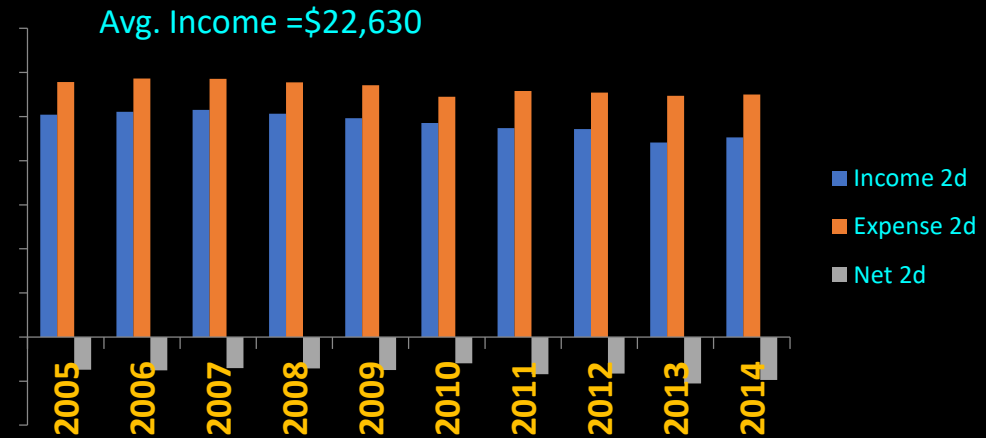
Standard approaches re subsidizing and raising income and providing supportive services, aren't keeping up

So saving a dollar is worth as much as generating a new one and

Achieving both can start reducing poverty



Falling Behind \$886/month

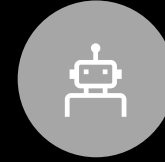


Falling Behind \$407/month

Uses of Housing Affordability Indexes Based on Expenditure- to-Income Ratios



DESCRIBE a typical household's housing expenditure



ANALYZE trends, compare different household types



ADMINISTER rules defining who can access housing subsidies



DEFINE housing need for public policy purposes



REDEFINE housing affordability to include unbundled costs such as transportation, energy and water expenditures



PREDICT ability of a household to pay the rent or mortgage



SELECT households for a rental unit or mortgage



EDUCATE & MARKET share information through counseling to shape affordability-seeking behavior

Provides easy access to affordability indexes for Housing, Transportation & H+T at all scales Available for all counties, regions, cities, towns Includes underlying data



Home + Car | H+T Index | H+T Fact Sheets | Total Driving Costs | Comparison Maps | Data | About | CNT

Columbus OH

Municipality: Columbus, OH

H+T Costs % Income: 43%
Housing: 23% Transportation: 20%

Housing + Transportation Costs % Income

Housing + Transportation Costs % Income ?
Average : 43% Range: 24 - 105

| Population | Household | Neighborhood |
|------------|------------|-----------------|
| | Households | % of Households |
| < 24% | 896 | 0.3% |
| 24 - 36% | 63,553 | 20.5% |
| 36 - 45% | 136,108 | 43.9% |
| 45 - 54% | 86,435 | 27.9% |
| 54 - 66% | 19,199 | 6.2% |
| 66 - 78% | 3,318 | 1.1% |
| 78 - 87% | 31 | 0% |
| 87% + | 182 | 0.1% |
| Total | 309,722 | 100% |

Household: Regional Typical Regional Moderate National Typical

Income: \$55,878 Commuters: 1.18 workers Household Size: 2.54 people

<http://htaindex.org> Tour | [+ Share Map]

Map | Satellite

Housing + Transportation Costs % Income

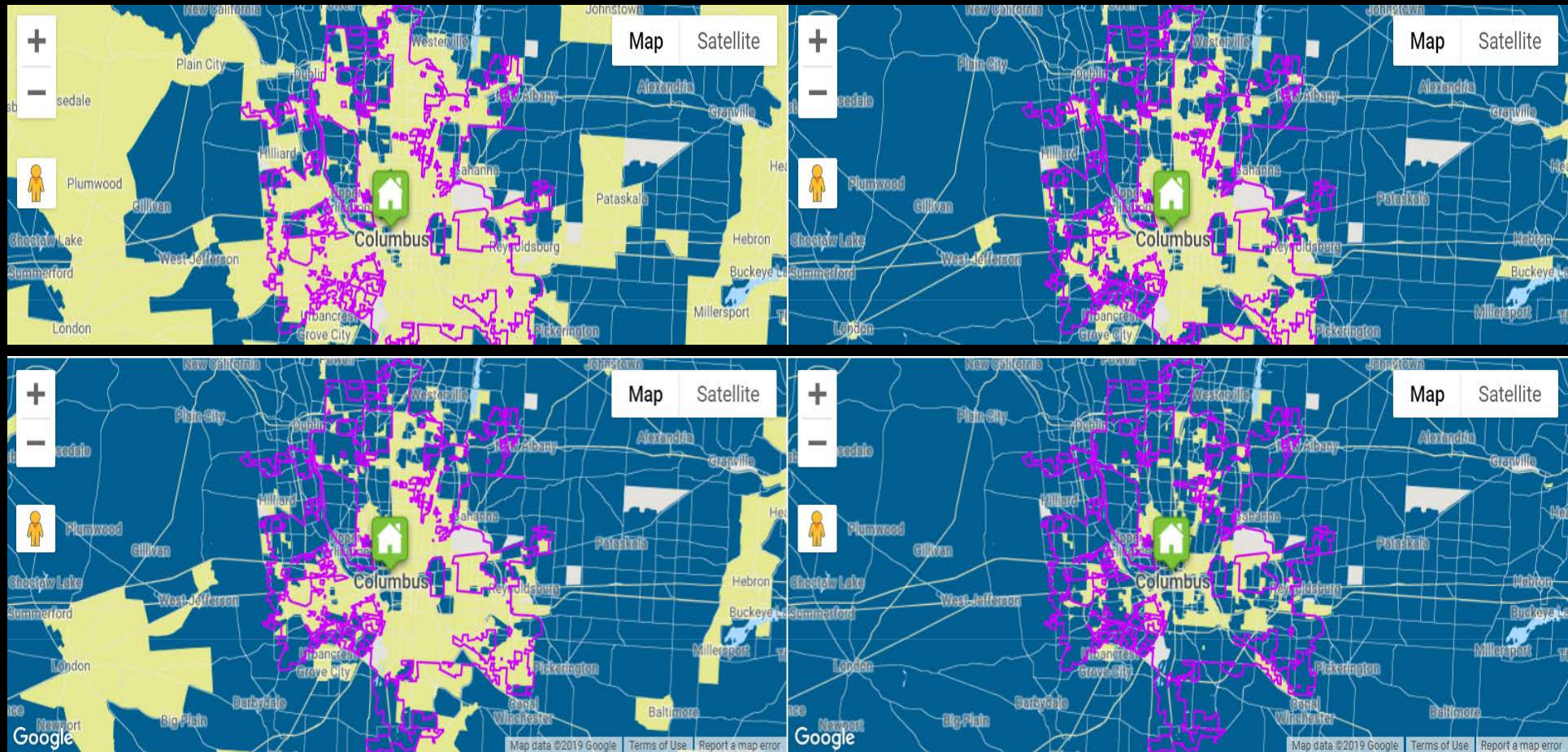
- < 24%
- 24-36%
- 36-45%
- 45-54%
- 54-66%
- 66-78%
- 78-87%
- 87%+

Map data ©2019 Google | Terms of Use | Report a map error

Columbus OH- Yellow indicates Affordable Places
Median Income HHs on Top, 80% of Median on Bottom
Uses $H < 30\%$ on Left &
 $H+T < 45\%$ of Income on Right



Moving from Upper Left to Lower Right Drops the Number of HH's Living in Affordable Places by 179,952



H+T Index in Use Nationwide



- **California Strategic Growth Council** used to allocate \$1 Billion of cap-and-trade proceeds for affordable housing near transit
- **HUD and DOT** are using to screen sustainable communities and TIGER grant applications
- **Metropolitan Planning Organizations** in Bay Area, Chicago, DC and elsewhere using to re-screen, prioritize Long Range Transportation Plan investments
- The new HUD fair housing screen uses transportation affordability and transit access
- Location Efficient Mortgages underwritten using T-cost savings in Minneapolis, Columbus, Oakland, Boston
- Metropolitan Transportation Commission in Bay Area used to justify helping capitalize **Transit-Oriented Development investment fund**
- State of Illinois **new act** requires five agencies to screen investments
- City of El Paso, TX now uses to **direct affordable housing** to areas of low transportation costs
- Portland, others using to help **create a typology of TODs** that takes affordability and equity into account
- **Experimental counseling tools** (Phoenix, East Bay, Chicago) link users with locally available resources –Equity Express

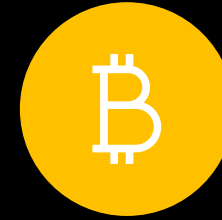
Uses of USEPA Water and Sewer Affordability Guidelines



SCORE ASSESS
SYSTEM/GOVERNMENT
FINANCIAL CAPABILITY



PRICE SET TERMS FOR
LOANS FROM REVOLVING
LOAN FUNDS



DISCOUNT SUBSIDIZE
FUNDS AWARDED FROM
REVOLVING FUNDS



COUNSEL PROVIDE
USERS/CUSTOMERS/HOUSE
HOLDS INFORMATION ON
THEIR CONSUMPTION
COMPARED TO
BENCHMARKS



PLAN SET GOALS FOR
AREAWIDE INCREASE IN
AFFORDABILITY

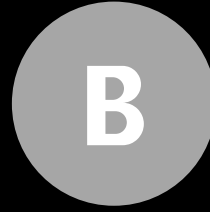


RESTRUCTURE
DETERMINE OPTIONS FOR
OFFERING SERVICE IN
WAYS THAT REDUCE
SYSTEMS COST

The Desired Index...



SHOULD ADDRESS
NOT ONLY
“LOWER-
MODERATE”
INCOME
HOUSEHOLDS, BUT
POVERTY
HOUSEHOLDS TOO



NEEDS TO
ACCOUNT FOR
VARIATION BY
HOUSEHOLD TYPE



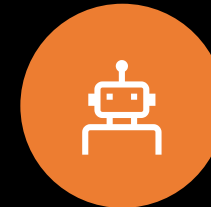
SHOULD ACCOUNT
FOR “RESIDUAL” OR
“DISPOSABLE”
INCOME AVAILABLE
AFTER FIXED COSTS,
SUCH AS FOR
HOUSING AND
TRANSPORTATION



NEEDS TO AVOID
DOUBLE-
COUNTING



USES A USER-
FRIENDLY WEB
TOOL EG THE
HUD LOCATION
AFFORDABILITY
PORTAL



DEMONSTRATED
HERE USING CITY
OF COLUMBUS
OH AND
ADJUSTED FOR
HOUSEHOLD SIZE

Location Affordability



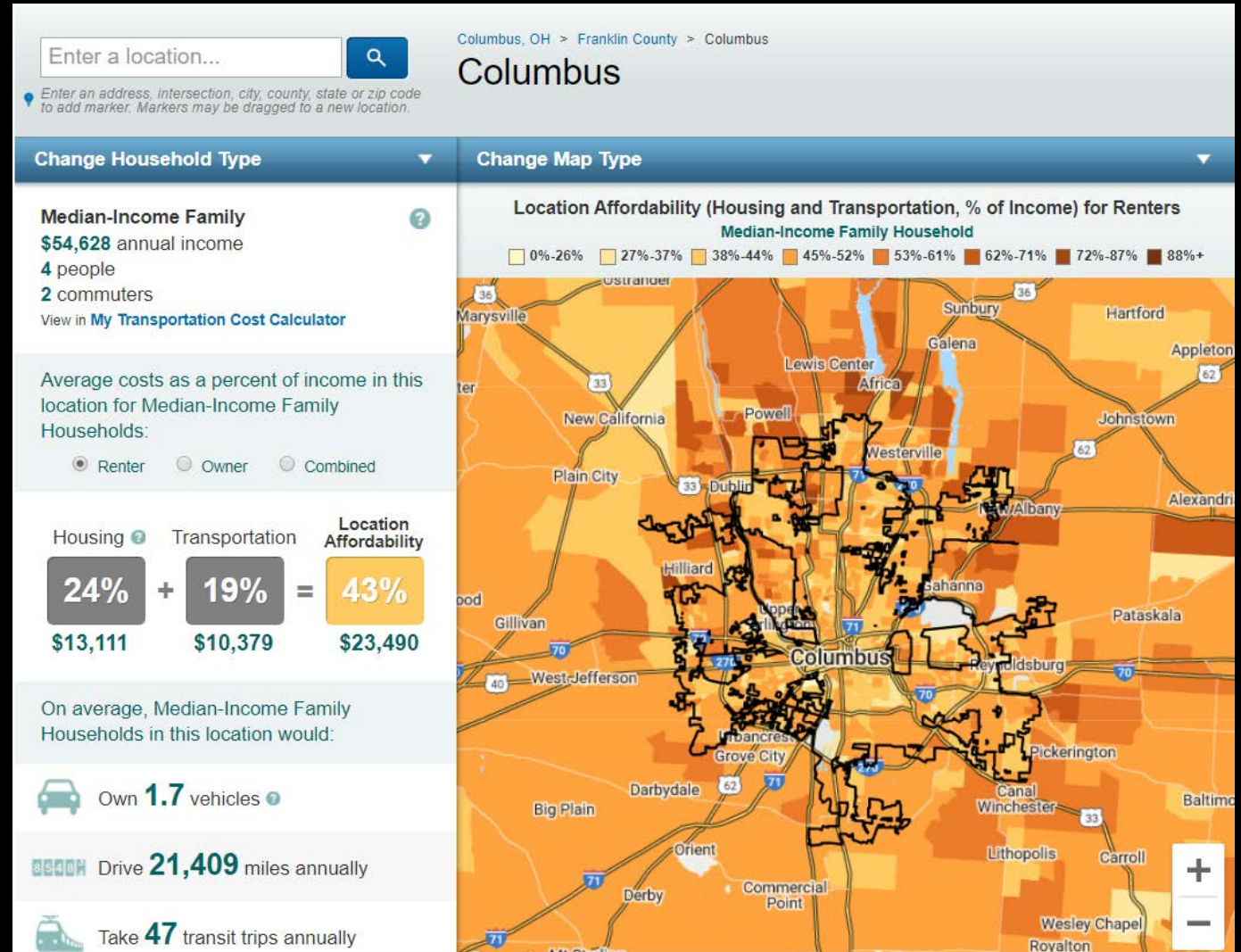
Showing MHI HH
Combined H+T
Affordability

Prepared for HUD &
DOT

Analyzes larger range
of household types

Residual income =
MHI minus H+T =
\$31,138

Avg bill = \$1,272/Year
=4.1% of Residual
Income



Location Affordability



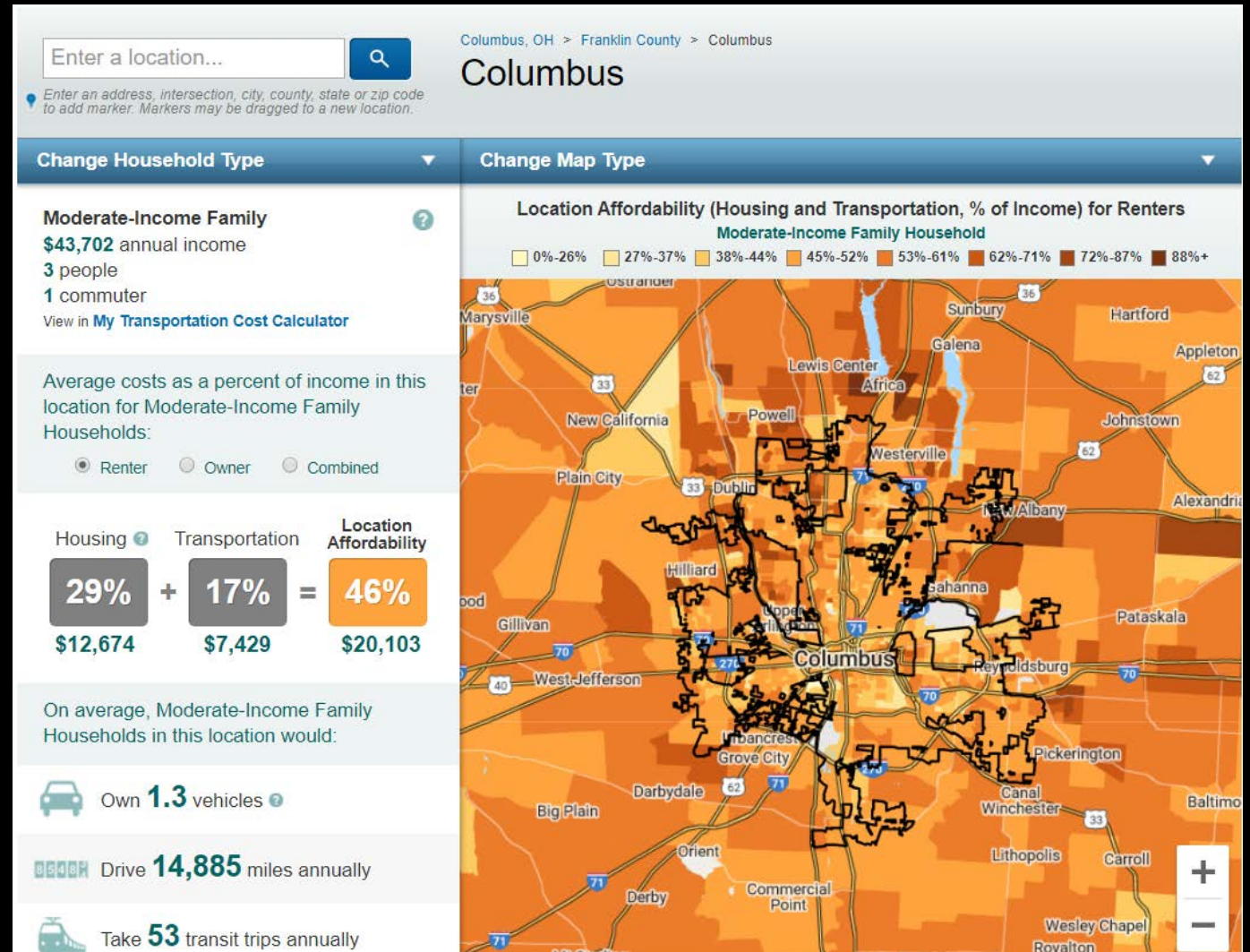
Showing 80% of AMI
3-person HH

28% for H and
17% for T

46% Average H+T

Residual = \$23,599

Average bill = \$1,145
= 4.8% of Residual



Location Affordability



Showing 50% of AMI

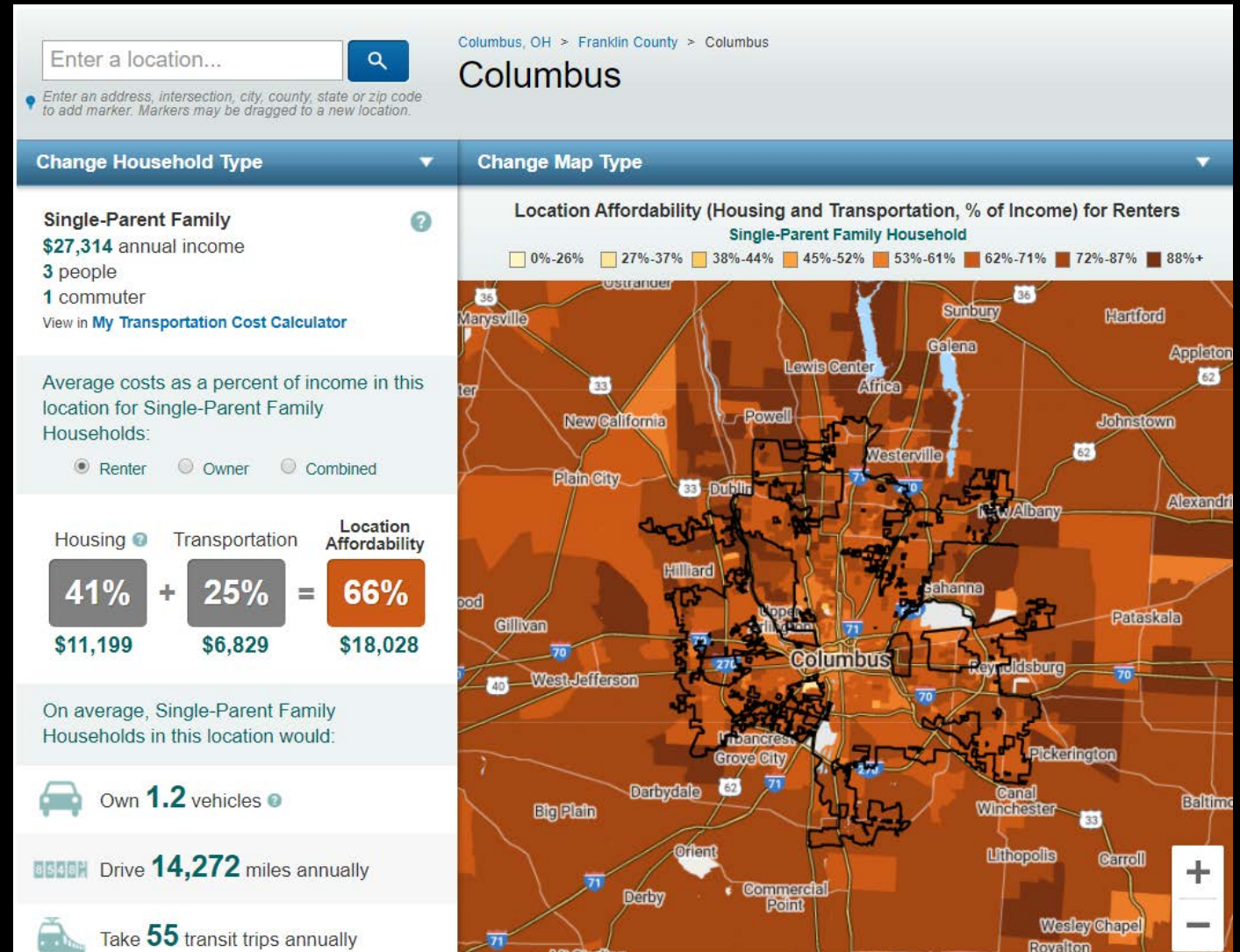
Single-Parent,
3-Person HH

66% for H+T

Residual Income = \$9,206

Avg. bill = \$973

Avg. bill = 10.6% of Residual



Location Affordability



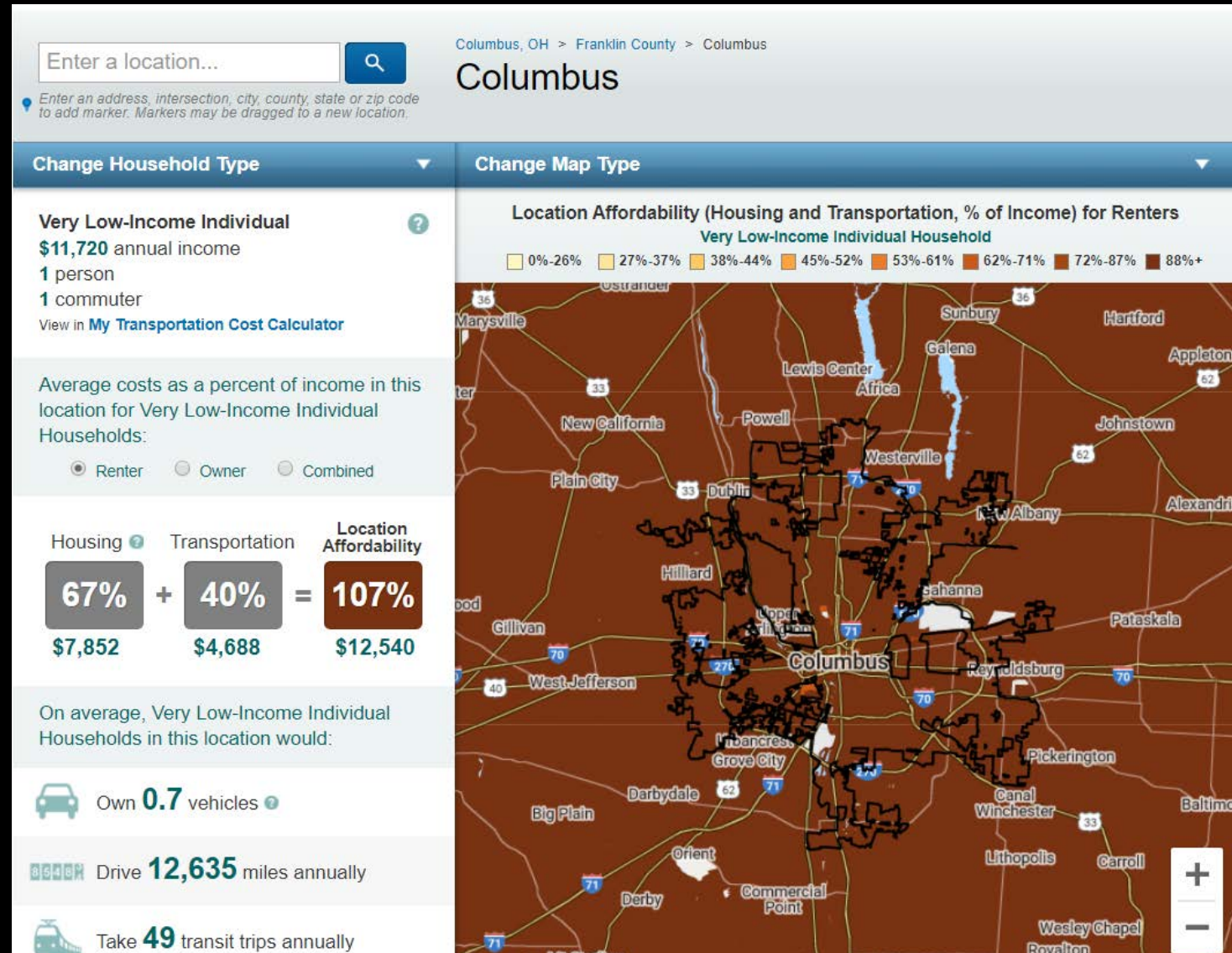
Very Low-Income individual, 20% of AMI

107% of Income for H+T

Residual Income = *minus \$820*

Average bill = \$890/year

= 109% of Residual Income



Memphis Poverty Reduction Plan—Achieving the Right Commitments Results in a More Efficient & Prosperous Memphis That Works for Everyone

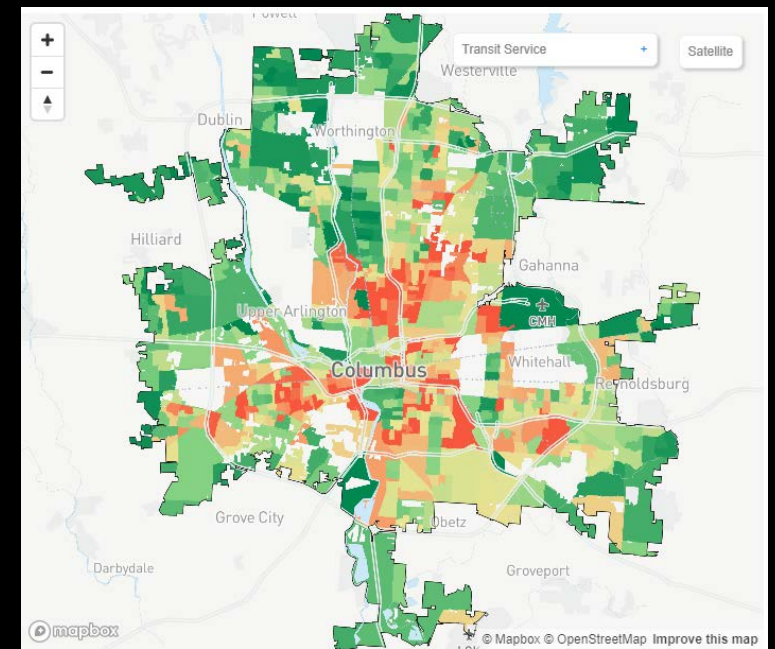
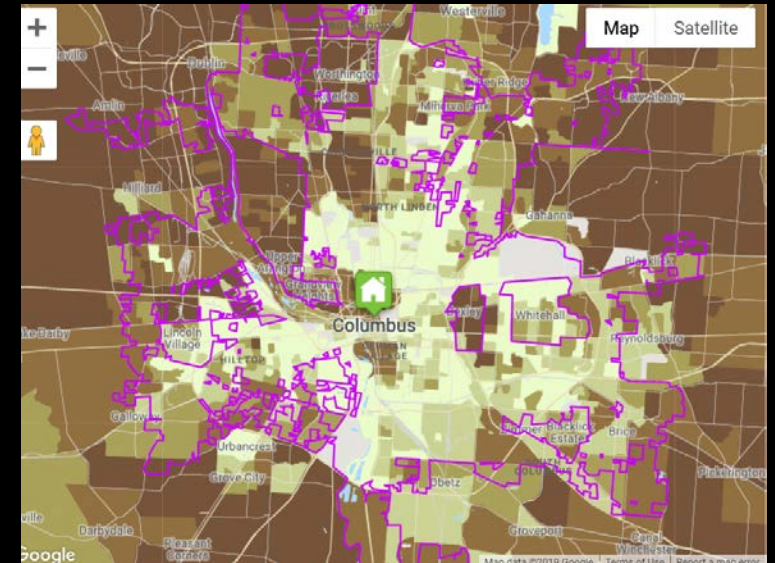
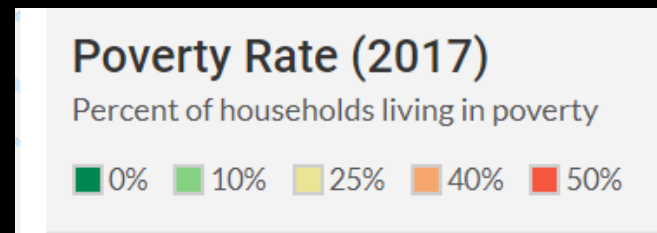
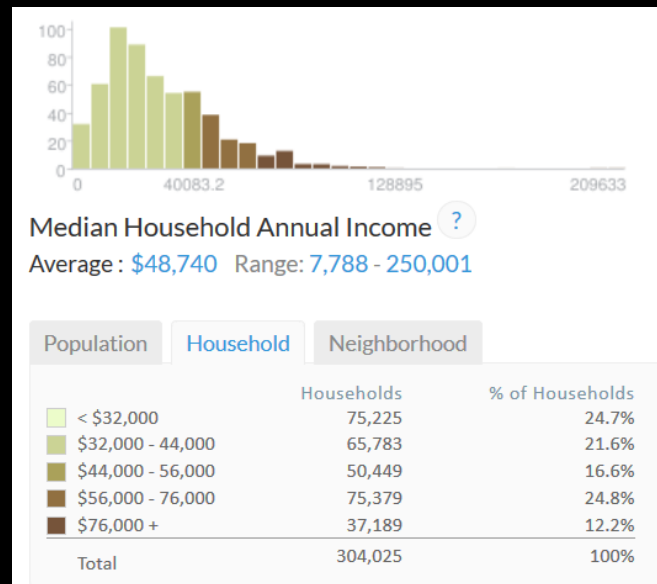


Where Columbus's Poorer Households Live...

Showing household income on top & poverty on bottom map

21% of people or 177,000 are below the poverty line

Largest number of any city in Ohio

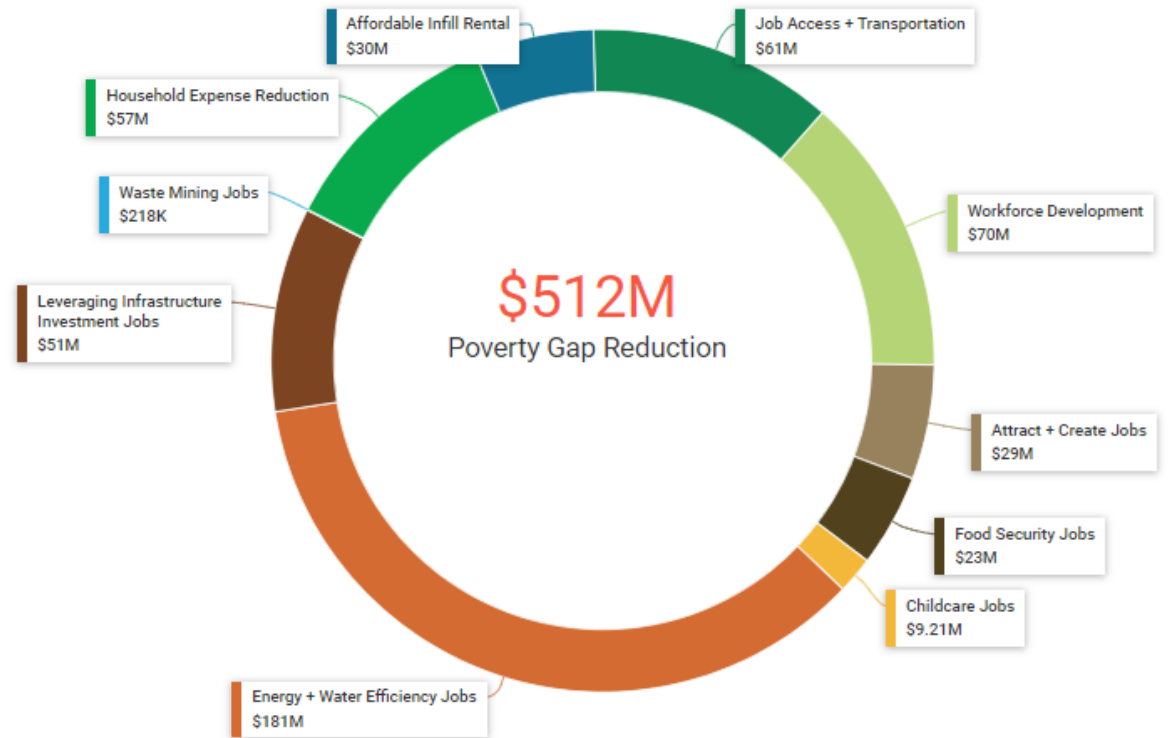


Columbus's 21% Poverty Rate =
177,000 persons—

A Sample Plan to Reduce that by
73,000 or 42% with \$512 Million
community benefits commitment
lowering the poverty rate to 12%--an
amount < 1/3 of 1% of this MSA's Gross
Metropolitan Product

In this benefit illustration half is new
income from workforce
development and job creation
*Or a new, no-regrets scenario in
which accelerated livability
investments with a larger fraction
devoted to cost-of-living reduction*

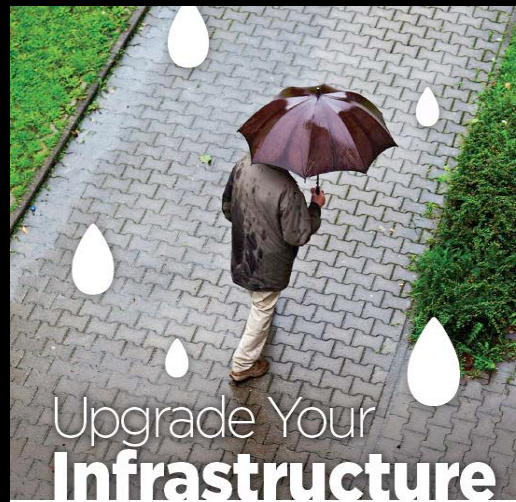
Closing the Poverty Gap: This portfolio of strategies will generate \$512M towards closing a \$510M poverty gap needed to reduce the poverty rate in Columbus, Ohio by 42%.



| | | | | | |
|-------|-----------------------------|---------|--------------------------------|-------|-----------------------------|
| \$61M | Job Access + Transportation | \$9.21M | Childcare Jobs | \$57M | Household Expense Reduction |
| \$70M | Workforce Development | \$181M | Energy + Water Efficiency Jobs | \$30M | Affordable Infill Rental |
| \$29M | Attract + Create Jobs | \$51M | Infrastructure Investments | | |
| \$23M | Food Security Jobs | \$218K | Mining the Waste Stream | | |

Example —Green Infrastructure Jobs—Complement Storm Sewers with Tree Cover and Permeable Landscape

- Catching raindrops where they fall
- 90% flood reduction
- **Memphis will adopt a Green Infrastructure Portfolio Standard with long range goals and annual projects**
- **Work with Sustainability Office and Public Works, TN Dept. of Environment & Conservation, USEPA, Greenprint, SC2**
- **Launch a coordinated strategy to get to scale quickly**



A GUIDE TO THE
Green Infrastructure Portfolio
Standard and Stormwater Retrofits

A JOINT EFFORT BY
American Rivers
The Center for Neighborhood Technology
The Great Lakes and St. Lawrence Cities Initiative



Alley with impermeable pavement and poor drainage.



Alley incorporating green alley principles.

Examples of Investing That Lowers Costs + Raise Wages + Reduces Poverty



| Expenses | Solutions | Aided by |
|--|---|--|
| <ul style="list-style-type: none">• Housing | <ul style="list-style-type: none">• Sharing, Preserving, Adding (e.g. ADUs) | <ul style="list-style-type: none">• Community Benefits |
| <ul style="list-style-type: none">• Transportation | <ul style="list-style-type: none">• Local convenience + regional access• Discount fares, increase frequency and routes | <ul style="list-style-type: none">• Improved regional plans• Community Partnerships |
| <ul style="list-style-type: none">• Water | <ul style="list-style-type: none">• Progressive rates & bills, water efficiency, rainwater harvesting, green infrastructure | <ul style="list-style-type: none">• Improved policies |
| <ul style="list-style-type: none">• Energy | <ul style="list-style-type: none">• Progressive rates & bills, home retrofits, community energy | |

Emergent Opportunities In Ohio to Secure Both System and User Strategy & Financing



State Revolving Loan Funds for
Clean Water and Safe Drinking
Water & Freshwater

Energy Efficiency Funds for
Household Assistance from Utilities
and State

USEPA Integrated Water Planning

Climate Action Plans

Proposed Renewal of DOE EECBG
Block Grant

New GAAP Accounting Rules Support
Distributed + Partner Approaches to
Services

Existing & Pending Commitments in
Ohio to Infrastructure Planning &
Renewal

Use Funding Flexibility Where It
Exists—EG, RLFs and Metro Planning
Orgs



Thank you!

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