

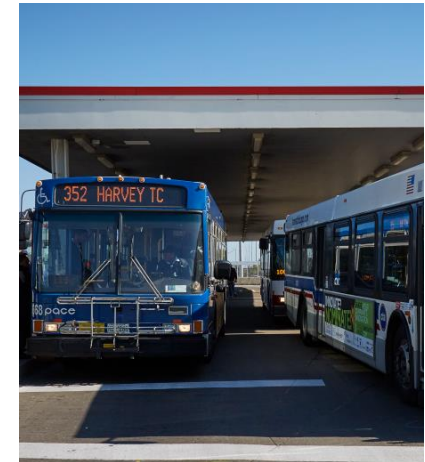


Chicago Metropolitan
Agency for Planning



NWPA Water Supply Sustainability Plan: Residential development standards strategy

NWPA TAC Meeting
January 23, 2024



Agenda

Strategy overview

- Description
- Implementation approaches
- Case studies
- Current implementation levels

Baseline information

- Target audience
- Baseline water use

Water savings estimates

WSSP strategy road map

- Residential Sector
 - Residential retrofits - Single Family
 - Residential outdoor water use (landscape efficiency) - Single Family
 - **Residential development standards (new development)**
- Water system
 - Water loss control
 - Costing & Pricing
- Commercial, Industrial and Institutional (CII) Sector
- Information & Education

Residential development standards strategy

Strategy description

Communities incorporate water conservation measures into residential development standards, like those outlined in EPA's WaterSense Homes program.

Developers incorporate water conservation measures in the construction of new homes.



Source: Bankrate

Benefits of water conservation in new homes

Water savings built in from the start

- Reduce leaks and incorporate water-efficient fixtures/appliances that reduce water use and the need for future retrofits

Added value to communities/water utility

- Can help add new housing and grow communities while limiting impacts on water and infrastructure resources.

Added value to the homebuyer

- Cost savings and improved performance




Source: City of Ferndale

EPA WaterSense Homes Program

Designed to encourage the construction and purchase of water-efficient and high-performing homes

- 30 percent more water-efficient than typical new construction homes

WaterSense® labeled homes are designed to use less water!

look for  **WaterSense**
Meets EPA Criteria

FREE OF LEAKS
Homes are inspected to be free of visible leaks, reducing water waste and preventing costly damage.

PEACE OF MIND
Trained professionals conduct independent verifications, so you can be sure homes deliver savings.

SAVINGS THAT PERFORM
WaterSense labeled plumbing products ensure efficiency and performance.

www.epa.gov/watersense/homes

WaterSense Homes requirements

Meet all the items on the mandatory checklist

Achieve 30 percent water savings

- Other indoor and outdoor measures may need to be included to achieve 30 percent water savings

Receive verification and certification by an EPA-approved Home Certification Organization (HCO)

EPA WaterSense Homes mandatory checklist

| Item | Requirement |
|------------------------------|---|
| Leaks | <ul style="list-style-type: none">• Pressure-loss test on all water supplies detects no leaks• Free of visible leaks from:<ul style="list-style-type: none">• Toilets• Bathroom faucets• Showerheads• Bathroom tub faucets (tub spouts) when showerheads are active• Kitchen and other sink faucets• Other fixtures or appliances (water heaters, clothes washers, dishwashers, hose bibbs, irrigation systems) |
| Toilets | WaterSense-labeled |
| Bathroom sink faucets | WaterSense-labeled |
| Showerheads | WaterSense-labeled |

Source: EPA WaterSense, 2021

Implementation approaches

| Implementation approach | What does the approach entail? | Example | Who can implement the approach? |
|-------------------------|---|--|---------------------------------|
| Incentive | Encourage builders/developers to pursue WaterSense Homes certification through financial incentives such as rebates | Central Arizona Groundwater Replenishment District offers builders a \$1,000 rebate per home that is WaterSense-certified | Municipality, water utility |
| Requirement | Require new development to meet WaterSense certification standards | City of Phoenix's Sustainable Desert Development Policy requires new development to meet EPA WaterSense or equivalent certification as a stipulation in all rezoning cases | Municipality |

Case study: Arizona Groundwater Replenishment District (CAGRD)

Implementer/type: CAGRD of the Central Arizona Project (water utility)

Background:

- Encourage water conservation and reduce groundwater use for CAGRD members
- Reduce cost and competition for scarce water supplies

Approach used: Incentive

Strategy:

- Offer builders a \$1,000 rebate per home that is WaterSense-certified



Source: Central Arizona Project

Case study: Phoenix, AZ

Implementer: City of Phoenix (municipal water utility)

Background:

- Advance drought management and water conservation goals
- Support sustainable development

Approach used: Requirement

Strategy:

- Sustainable Desert Development Policy requires new development to meet EPA WaterSense or equivalent certification as a stipulation in all rezoning cases




















Source: CDP

Current levels of implementation

There are no municipalities in the NWPA region that have adopted the WaterSense Homes program.

HCOs available to service Illinois.

| HCO | SCOPE | | | METHOD FOR LABELING HOMES |
|---|---|--|--|--|
| | REGIONALITY | BUILDING TYPES | CONSTRUCTION TYPE | |
|  |  | Single-Family  | New Construction  | Achieve a score of 70 or less under CHEERS WaterSense |
|  |  | Single-Family  | New & Existing Construction  | Achieve a score of 66 or less under the Water Efficiency Rating Score (WERS) with WaterSense Baselines |
|  |  | Single-Family & Multifamily  | New & Existing Construction  | Complete a set of selected practices from the National Green Building Standard (NGBS) |
| | | | New Construction  | Achieve a score of 64 or less under the Water Rating Index |
|  |  | Single-Family  | New & Existing Construction  | Achieve a score of 70 or less under HERS _{H2O} |

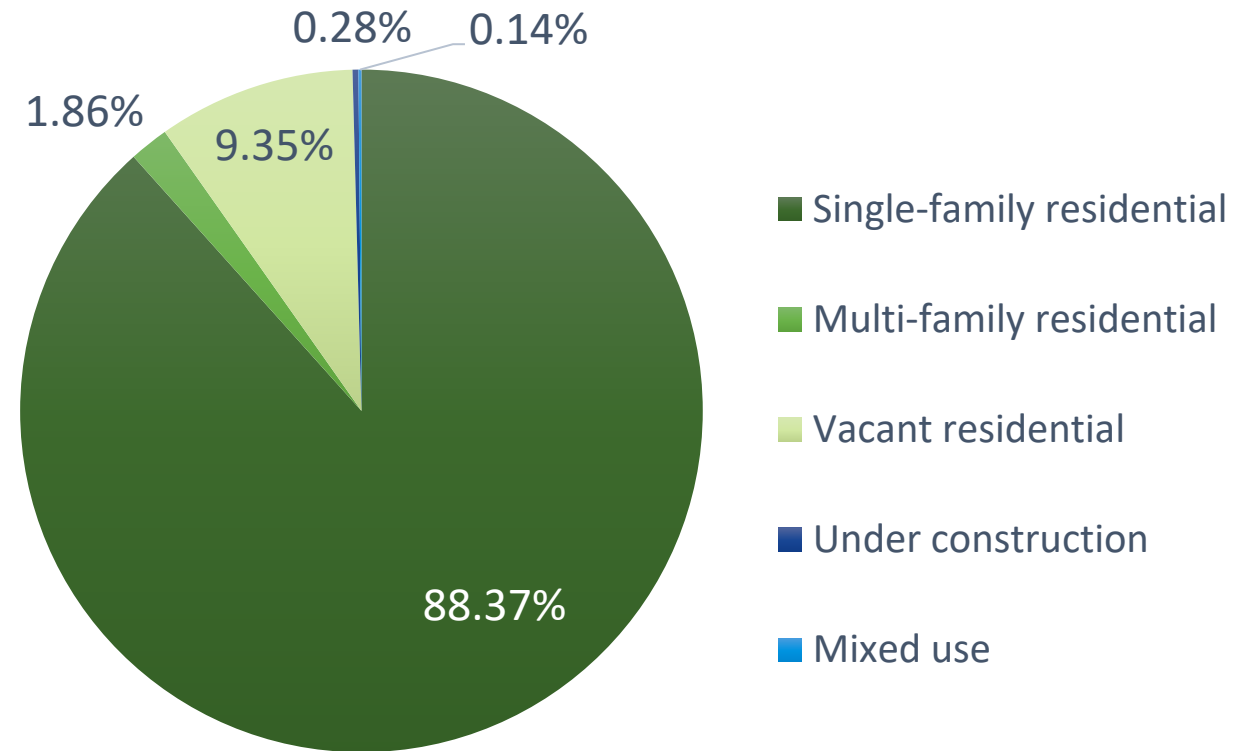
Source: Shein J., US. EPA, NWPA November TAC presentation

Baseline information

Target audience and geography

NWPA single-family homes built between 2020 and 2050 and are served by a community water supply (CWS) system

Residential land uses in NWPA region (by acre)



Community water supply (CWS) sector data

CMAP Water Demand Forecast, 2022 (county-level projections)

- The Illinois Water Inventory Program (IWIP) 2018 water use data

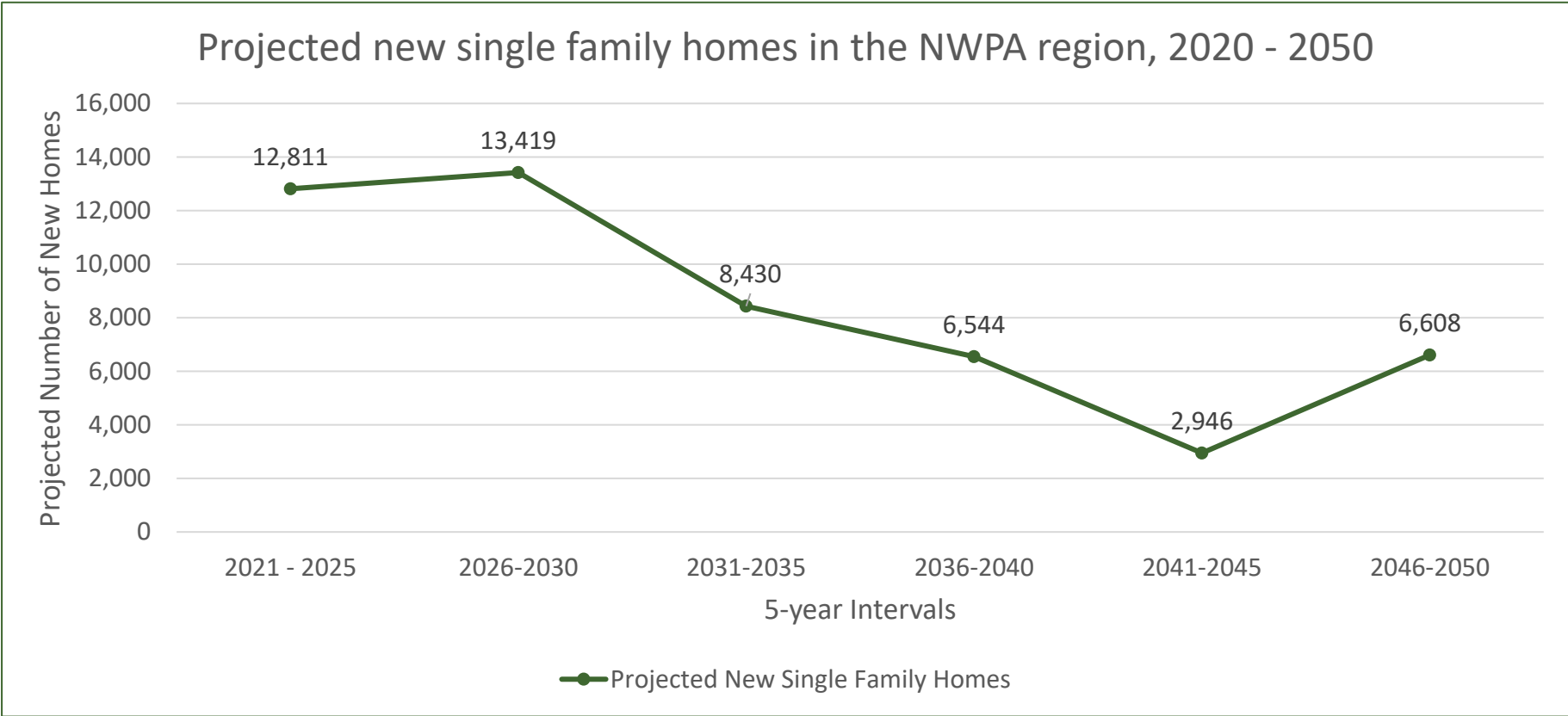
Buildings data, 2020-2050 in 5yr intervals (from CMAP's land use-based socioeconomic forecast)

Historic and projected CWS withdrawals

Municipal Community Water Supply (CWS) water withdrawals in MGD, historic (2018) and projected (2020-2050)*

| | 2018 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|----------------|-------|-------|-------|-------|-------|-------|------|------|
| Kane | 50.5 | 48.3 | 44.7 | 42.5 | 40.0 | 37.3 | 34.2 | 31.3 |
| Kendall | 5.0 | 4.8 | 4.8 | 4.7 | 4.6 | 4.3 | 4.1 | 3.9 |
| Lake | 51.1 | 49.7 | 47.6 | 45.9 | 44.5 | 42.3 | 39.9 | 37.5 |
| McHenry | 19.9 | 19.4 | 19.0 | 18.9 | 18.7 | 18.4 | 18.2 | 18.2 |
| Total | 126.5 | 122.1 | 116.2 | 111.9 | 107.8 | 102.3 | 96.4 | 90.9 |

Projected residential development (new)



Source: CMAP

Water savings estimates

Estimating Water Savings

2025 Calculation shown, repeated for each forecasted year

| NWPA Counties | SF New Homes | Forecasted GPCD | Forecasted ave hh size | Forecasted Water Use (MGD) | Water Savings (MGD) (10%- 50% participation) |
|--------------------------|---------------|-----------------|------------------------|----------------------------|--|
| Kane | 3,333 | 82.6 | 2.78 | 0.77 | 0.02 - 0.11 |
| Kendall | 3,236 | 68.2 | 2.74 | 0.60 | 0.02 - 0.09 |
| McHenry | 2,955 | 81.2 | 2.62 | 0.63 | 0.02 - 0.09 |
| Lake | 3,287 | 82.2 | 2.66 | 0.72 | 0.02 -0.11 |
| Total NWPA Region | 12,811 | | | 2.72 | 0.08 - 0.41 |

Estimating Water Savings

- Number of new single-family homes per county between 2020 - 2050, 5yr intervals from CMAP UrbanSim
- Forecasted GPCD, between 2020 - 2050, 5yr intervals from CMAP 2022 Water Demand Forecast.
 - Municipal scale GPCD, not adjusted for customer class/water use sector
 - No adjustment made for existing/new construction gpcd
- Forecasted average household size, 5yr intervals, calculated from CMAP socioeconomic forecast data
- Water Savings of 30%
- Program participation rate: Low-end 10% and high-end 50% taken from CMAP Water2050
- Like other estimates so far, these are point-in-time estimates

Draft Water Savings Estimates

Water Savings (MGD), 10% (Low) - 50% (High) Participation Rate

| NWPA Counties | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Kane | 0.02 - 0.11 | 0.03 - 0.16 | 0.02 - 0.08 | 0.01 - 0.06 | 0.00 - 0.02 | 0.00 - 0.02 |
| Kendall | 0.02 - 0.09 | 0.01 - 0.05 | 0.00 - 0.02 | 0.00 - 0.00 | 0.00 - 0.01 | 0.00 - 0.00 |
| McHenry | 0.02 - 0.09 | 0.02 - 0.11 | 0.02 - 0.08 | 0.02 - 0.08 | 0.01 - 0.03 | 0.02 - 0.11 |
| Lake | 0.02 - 0.11 | 0.01 - 0.07 | 0.01 - 0.03 | 0.00 - 0.02 | 0.00 - 0.01 | 0.00 - 0.01 |
| Total NWPA Region | 0.08 - 0.41 | 0.08 - 0.40 | 0.04 - 0.22 | 0.03 - 0.16 | 0.01 - 0.07 | 0.03 - 0.14 |

Discussion

Discussion: Targeted audience

The strategy is currently focused on single-family homes.

Should we also estimate savings for multi-family development?

Discussion:

Implementation approaches

Which implementation approaches – incentives or requirements – appeal most to NWPA communities?

Implementation levels for reference:

- Low level: 10% of communities (~9 communities)
- High level 50% of communities (~42 communities)

Discussion:

Implementation approaches

What can help communities implement new residential standards?

- Are there existing programs communities can build onto or enhance with new residential development standards?

Implementation levels for reference:

- Low level: 10% of communities (~9 communities)
- High level 50% of communities (~42 communities)



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Questions?

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