

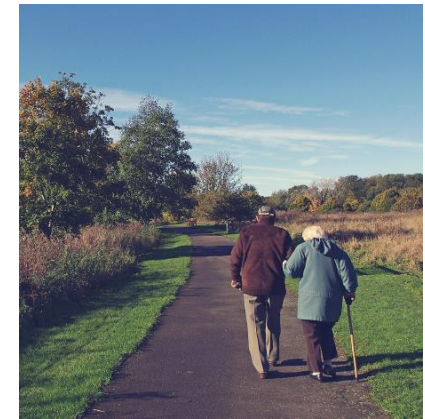
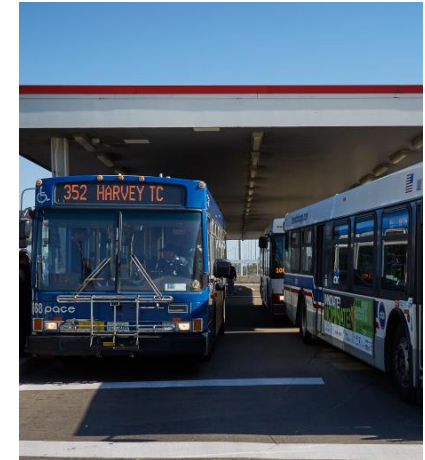


Chicago Metropolitan
Agency for Planning



NWPA Water Supply Sustainability Plan: Vision and Goals Development

NWPA Technical Advisory Committee
February 28, 2023



Project overview

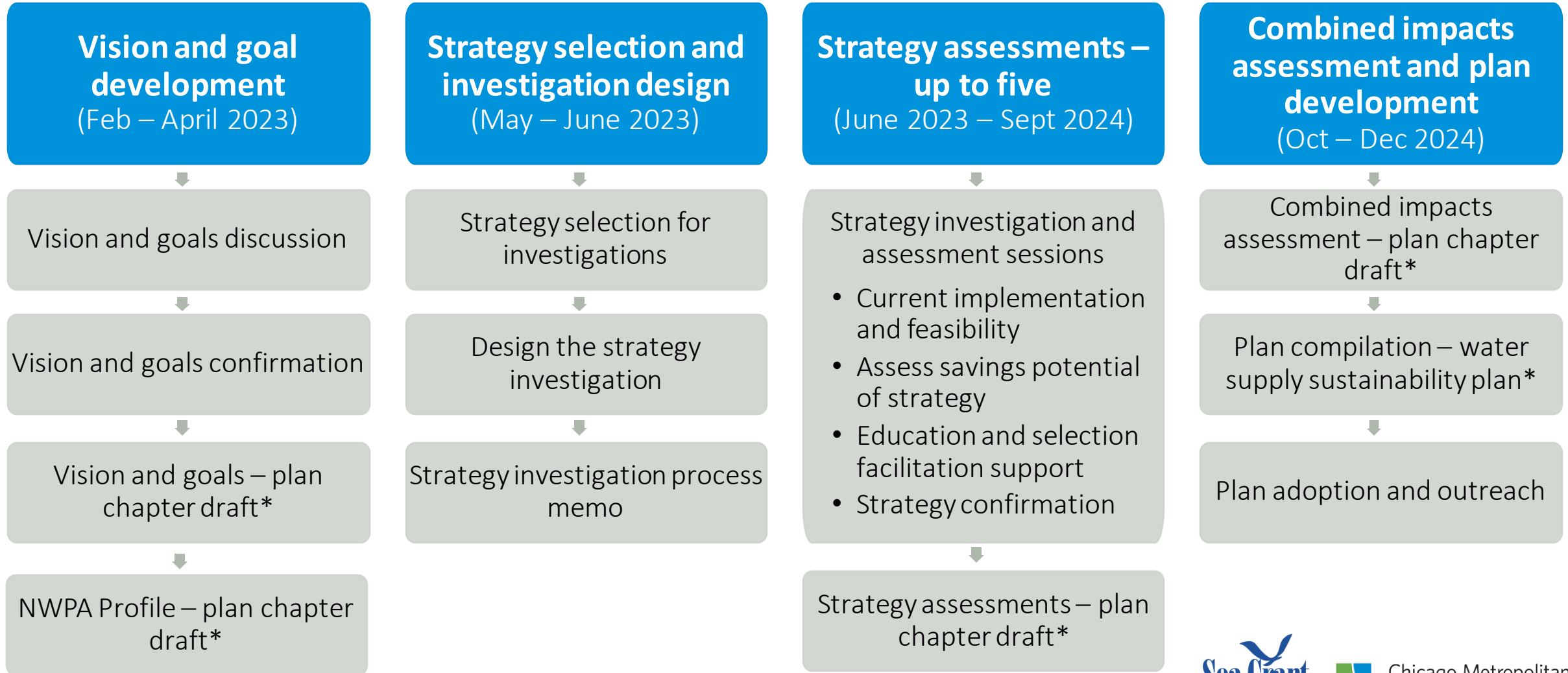
Why are we here?

Assist the Northwest Water Planning Alliance (NWPA) in developing a water supply sustainability plan

What will the Plan provide?

A shared vision and broad potential water savings recommendations to promote the long-term sustainability of the water sources used by NWPA communities

Project scope and timeline



*Deliverables

TAC's role in planning process

Participate in TAC meetings; provide feedback on deliverables

Provide technical expertise and experience:

- Vision and goal development
- Strategy selection
- Current and feasible implementation
- Strategy confirmation

Assist with TAC recruitment

Project visioning

NWPA Water Supply Sustainability Plan

What it is

- Voluntary
- Broad potential water savings estimates for the NWPA region, not focused on any one municipality
- Raises awareness of the need for action and provides steps

What it is not

- Does not establish any new or broader regulatory authority
- Does not address unique conditions and issues facing individual municipalities
- Some locations may need to conserve more water
- Local governments, particularly in risk areas, will still need to develop their own local plans

Project vision

Draft vision:

“The NWPA water supply sustainability plan will put members on a path toward sustainable use of water resources.”

The Plan will achieve its vision with the following objectives:

- Establish water sustainability goals
- Identify voluntary, feasible, and effective strategies NWPA members can take
- Build greater municipal awareness of priority strategies and resources
- Serve as a template to guide local planning efforts

NWPA Mission Statement:

The NWPA, formed by intergovernmental agreement, seeks to collaboratively plan for and steward our shared river and groundwater resources to ensure a sustainable water supply for the people, economy, environment, and future generations.

NWPA Vision Statement:

The NWPA area will have dependable supplies of water for generations to come.

- *Northwest Water Planning Alliance 2020-2024 Strategic Plan*

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Polling questions

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Does the vision statement reflect the plan's objectives?

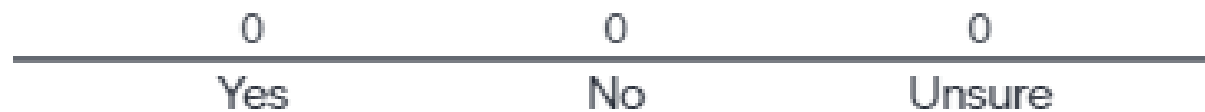
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Vision: “The NWPA water supply sustainability plan will put members on a path toward sustainable use of water resources.”

Plan objectives:

- Establish water sustainability goals
- Identify voluntary, feasible, and effective strategies NWPA members can take
- Build greater municipal awareness of priority strategies and resources
- Serve as a template to guide local planning efforts



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Are there additional words or phrases that should be included in the vision statement?

 Mentimeter



Developing sustainability goals exercise

Recap science and modeling assumptions behind the sustainable yield estimates

Brainstorm sustainability goals

- Identify undesirable outcomes for each water source

ISWS Modeling Tiers

Tier 1: Simple approach with approximate values that will be applied to all counties throughout the state

Tier 2: Local collaboration with ISWS, where local data and feedback are incorporated into the model

Tier 3: When a new methodology is introduced, and there is a need for additional technical expertise and capacity (beyond what ISWS has available)

Shallow aquifers

Sources modeled: Sand and gravel; Silurian dolomite, other shallow bedrock

How supply is modeled/determined:

	Calculation	Assumptions	Future considerations	Constraints/uncertainties
Tier 1	Total pumping equal to 20% of predevelopment flow from large and small rivers (averaged over a county)	<ul style="list-style-type: none"> Groundwater feeding rivers and streams has important ecological implications. A 20% reduction of groundwater to streams has an adverse impact on sensitive species. 	<p>Funded by IDNR for 24-25</p> <ul style="list-style-type: none"> Shallow aquifer drawdown Increasing recharge <p>Funded by Kane County</p> <ul style="list-style-type: none"> Use local research to update discharge value 	<ul style="list-style-type: none"> Do reductions in groundwater discharging to large rivers with heavy effluent discharge have an impact on sensitive species?
Tier 2			<p>Funded by Kane County</p> <ul style="list-style-type: none"> Water quality issues 	

Sources:

1. "[Revisiting Sustainable Yield in Northeast Illinois](#)," Daniel Abrams, Devin Mannix, University of Illinois, November 23, 2021
2. "[Sustainable Supply and Demand Discussion](#)," Daniel Abrams, March 23, 2021
3. "[A Regional-Scale Habitat Suitability Model to Assess the Effects of Flow Reduction on Fish Assemblages in Michigan Streams](#)," Zorn, Troy G., Paul W. Seelbach, and Edward S. Rutherford, 2012. Journal of the American Water Resources Association (JAWRA) 48(5): 871-895.
4. "[Kane County Water Resources Investigations: Simulation of Groundwater Flow in Kane County and Northeastern Illinois](#)," Meyer, Scott, Roadcap, George, Lin, Yu-Feng, and Walker, Douglas, May 2009



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What is the worst possible outcome or worst-case scenario for NWPA's shallow aquifer sources?

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Poll responses: Shallow aquifers

- Overuse/wells going dry/depletion
- Water quality issues
- Contamination (especially PFAS, Chlorides, legacy pollutants)
- Sources subject to unexpected impacts (spill nearby, emergencies, drought, impacts associated with science uncertainty)
- Negative impacts to the sole source (self-served domestic wells; often no back-up source)
- Low water levels – impacts on ecology
- Change of land use and development, particularly in recharge areas

Deep sandstone aquifers

Source(s) modeled: Cambrian-Ordovician Sandstones

How supply is modeled/determined:

	Calculation	Assumptions	Future considerations	Constraints/uncertainties
Tier 1	<p>Sums vertical and horizontal inflow/outflow of sandstone using current gradients.</p> <ul style="list-style-type: none"> Vertical infiltration from overlying units (natural) and well bores (anthropogenic) Horizontal flow from deep within the basin and recharge zones 	<ul style="list-style-type: none"> Stable water level based on current pumping conditions No planning horizon considered 	<ul style="list-style-type: none"> Uncertainty in future demands (particularly industrial) 	<ul style="list-style-type: none"> Reducing demand will also reduce horizontal inflow Existing areas of desaturation could recover by 2070, but issue may persist given localized pumping conditions
Tier 2		<ul style="list-style-type: none"> 20% of groundwater discharge feeds rivers and streams (for where the sandstone is shallow) 		

Sources:

1. "[Revisiting Sustainable Yield in Northeast Illinois](#)," Daniel Abrams, Devin Mannix, University of Illinois, November 23, 2021
2. "[Sustainable Supply and Demand Discussion](#)," Daniel Abrams, March 23, 2021
3. "[Calculating Sustainable Yield and Risk: Updates on ISWS Groundwater Flow Model](#)," Daniel Abrams, ISWS, July 28, 2020
4. "[A Regional-Scale Habitat Suitability Model to Assess the Effects of Flow Reduction on Fish Assemblages in Michigan Streams](#)," Zorn, Troy G., Paul W. Seelbach, and Edward S. Rutherford, 2012. Journal of the American Water Resources Association (JAWRA) 48(5): 871-895.
5. "[Kane County Water Resources Investigations: Simulation of Groundwater Flow in Kane County and Northeastern Illinois](#)," Meyer, Scott, Roadcap, George, Lin, Yu-Feng, and Walker, Douglas, May 2009

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Poll responses: Deep Sandstone aquifers

- Demand exceeds supply
- Dewatering/overuse*
- Well/pump failure
- Possible water quality issues/contamination*
 - Legacy wells open to Mt. Simon

Surface water: Rivers

Source(s) modeled: Fox River

How supply is modeled/determined:

	Calculation	Assumptions	Future considerations	Constraints/uncertainties
Tier 1	Currently: How much can a facility withdraw from the river (based on the maximum historic withdrawals.)	<ul style="list-style-type: none"> Current: Based on infrastructure/facility capacity as determined by a proxy from IWIP reported data 	<ul style="list-style-type: none"> Evaluate sustainability under low flow conditions Update flow calculations 	<ul style="list-style-type: none"> Method that considers environmental implications is currently under evaluation with ISWS Watershed Sciences and IDNR-OWR
Tier 2				

Sources:

1. ["Revisiting Sustainable Yield in Northeast Illinois,"](#) Daniel Abrams, Devin Mannix, University of Illinois, November 23, 2021
2. ["Sustainable Supply and Demand Discussion,"](#) Daniel Abrams, March 23, 2021
3. ["7-Day 10-Year Low Flow Maps,"](#) ISWS

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What is the worst possible outcome or worst-case scenario for NWPA's river source, the Fox?

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Poll responses: Rivers

- Low flows
- Potentially higher treatment costs
- Climate change/ land use changes – water quality drivers
- Impacts on aquatic life/ecology
- Water quality
 - Harmful algae blooms
- Not able to balance competing water uses

Surface water: Lakes

Source(s) modeled: Lake Michigan

How supply is modeled/determined:

	Calculation	Assumptions	Future considerations	Constraints/uncertainties
Tier 1	Existing LMO2 allocations from 2017	<ul style="list-style-type: none"> • Only communities with current allocations are considered • No adjustment to future allocations is made at this time 	<ul style="list-style-type: none"> • Update with 2022 allocations • Work with NWPA to ensure that Lake County is up-to-date 	<ul style="list-style-type: none"> • Procedure needs reviewed by IDNR-OWR
Tier 2				

Sources:

1. "[Revisiting Sustainable Yield in Northeast Illinois](#)," Daniel Abrams, Devin Mannix, University of Illinois, November 23, 2021
2. "[Sustainable Supply and Demand Discussion](#)," Daniel Abrams, March 23, 2021



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What is the worst possible outcome or worst-case scenario for NWPA's Lake Michigan water source?

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Poll responses: Lake Michigan

- Demand exceeds diversion amount (set by Supreme Court)
- Allocations being used up (set by IDNR)
- Allocation being revoked/going back to the Supreme Court
- Water quality / contamination (toxic algae, PFAS, pipelines/potential spills)
- Invasive species
- Cost of accessing lake Michigan water for deep aquifer communities
- Water rate hikes
- Water levels
- Climate change impacts the amount available to municipalities
 - Increased demand during periods of drought

Next Steps

Post-meeting survey (TBD)

Next TAC meeting:

- Confirmation of project vision and sustainability goals for each water source
- Draft NWPA Profile

Upcoming TAC meetings

March 28

Canceled due to WaterCon

April 25

Vision and goals confirmation
NWWPA Profile

May 23

WSSP: Strategy selection

June 27

WSSP: Strategy assessment (strategy #1)

July 25

WSSP: Strategy assessment (strategy #2)

August 22

WSSP: Strategy assessment (strategy #3)

September 26

WSSP: Strategy assessment (strategy #3,4)

October 24

WSSP: Strategy assessment (strategy #3,4)

November 28

WSSP: Strategy assessment (strategy #5)

Questions?

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