

# Missouri State Water Plan Update

KC Urban Stormwater Conference

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# Missouri Water Plan – Roles & Responsibilities



**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES



**US Army Corps  
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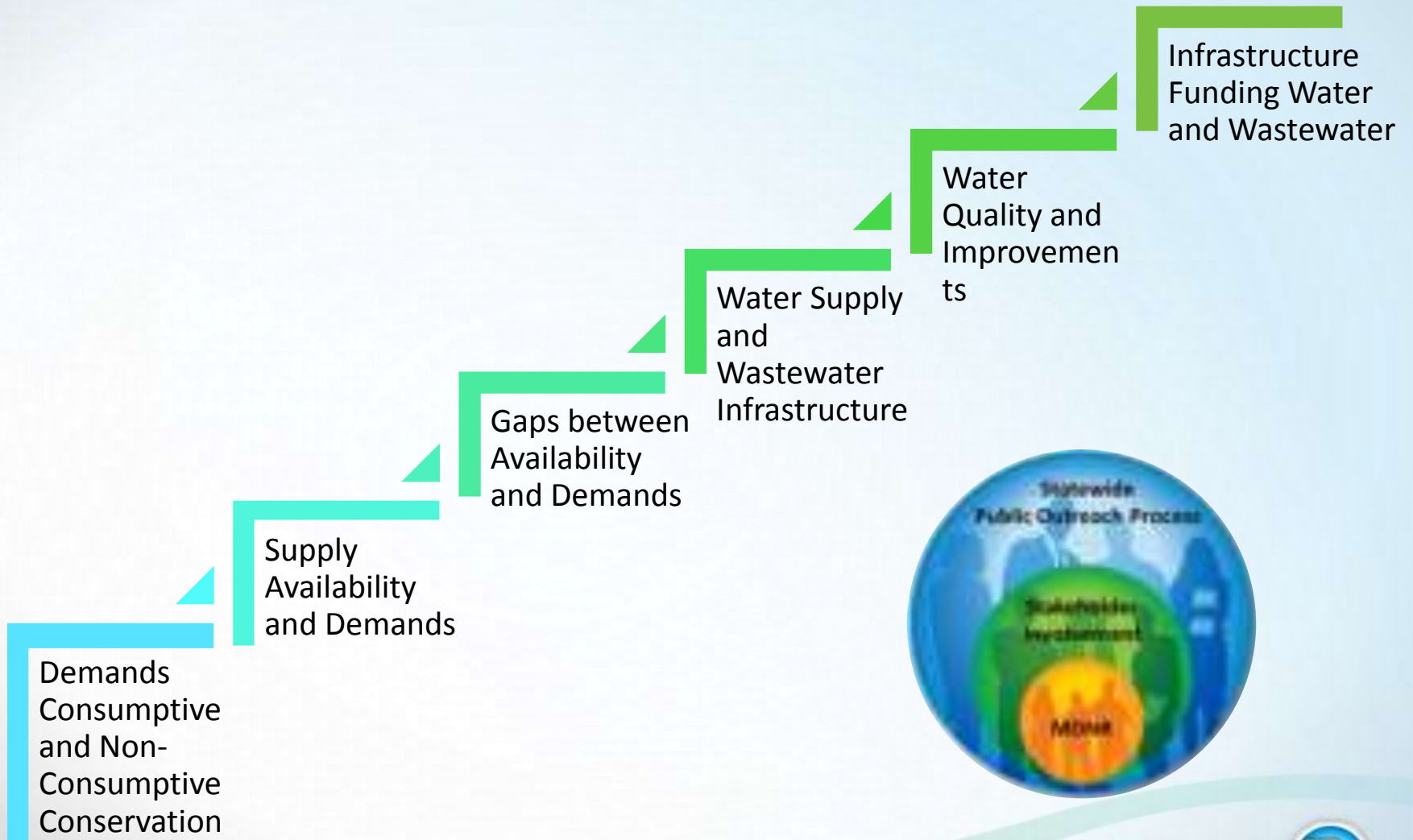


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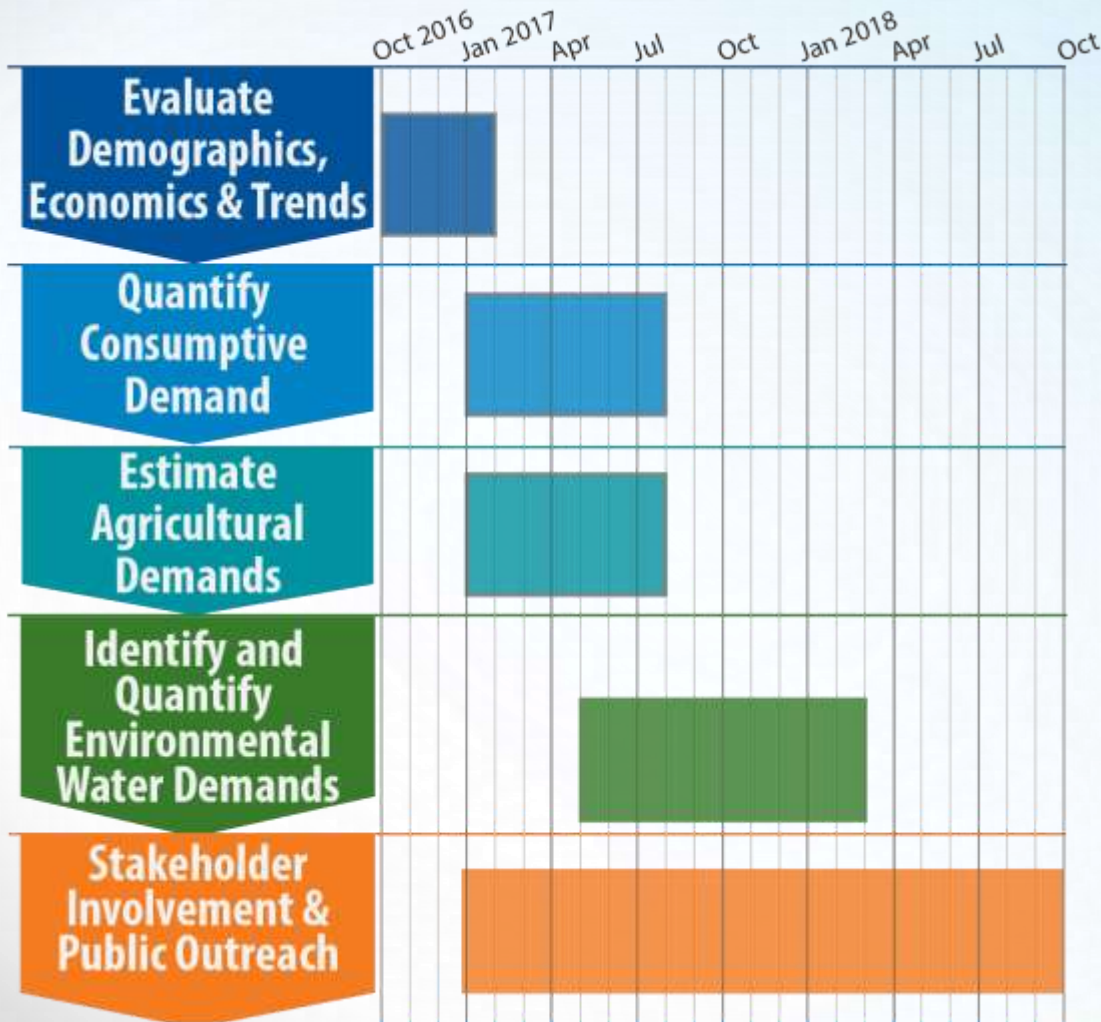
# Missouri Water Plan Update – Goals

1. Engage public and stakeholder forums, gather public input to help identify needs and priority areas of water resource development.
2. Establish key stakeholder advisory and technical groups to guide the department during water plan development.
3. Develop an updated evaluation of current groundwater and surface water availability and develop projected water supply demands.
4. Produce an in-depth analysis of current and future consumptive and non-consumptive water demands, and identify gaps in water availability based on water demand projections.
5. Identify municipal, agricultural, industrial and environmental infrastructure needs, and evaluate funding and financing opportunities.
6. Recognize water quality needs and assess how this affects water availability and existing water uses.
7. To help the department understand the areas where developing new and more sustainable water sources, better infrastructure, and more integrated water supplies, can help sustain water delivery in a dynamic climate.
8. To help the state better understand regionally where future water gaps may exist, as studies have revealed in parts of southwest and northern Missouri.

# Core Elements

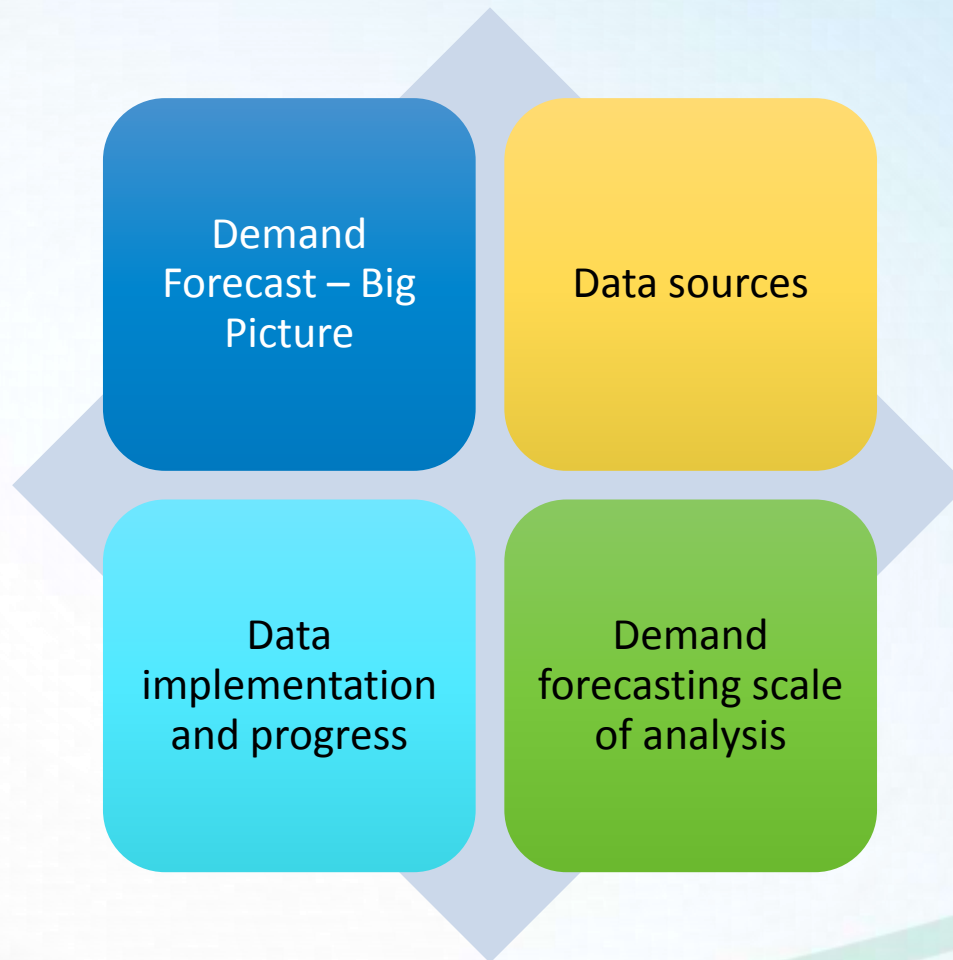


# Let's Review Current Tasks



# Missouri Water Plan Update: Demands

## *Overview of Demand Analysis*



# Missouri Water Plan Update: Demands

## Overview of Demand Forecasting

### Water Use

=

Average Rate of  
Use (unit use)

X

Number or  
Users (drivers)

- Per person
- Per household
- Per employee
- Per account
- Per acre
- Per square foot

- Residents or population
- Housing units
- Employment
- Accounts
- Acres
- Square footage

# Missouri Water Plan Update: Demands

## Define Water Use Sectors

- Public (Municipal) OR Residential and Non-Residential
  - Major Water User's Database, Public Water Census, Utility Survey
- Residential (self-supplied)
  - Major Water User's Database, Utility Survey (assume similar per capita water use as residential municipal – county specific)
- Industrial (self-supplied)
  - Major Water User's Database, Stakeholder input
- Agricultural (developed by University of Missouri)
  - Livestock
  - Crop Irrigation
- Non-Consumptive

Sectors are based on data availability

Surface water and Groundwater sources by Sector



# Missouri Water Plan Update: Demands Demographics, Economics, and Trends

## Population

### Low, medium, and high population projections through 2060

- First round scenarios will be based on economic trends
  - Developed in collaboration with MDNR Economist
- County census, Missouri Office of Administration
  - County specific projections through 2030; projections through 2060 developed in collaboration with MDNR Economist

# Missouri Water Plan Update: Demands Demographics, Economics, and Trends

## Employment

- Low, medium, and high employment projections based on economic trends
  - Developed in collaboration with MDNR Economist

## Develop and project water use for major industrial enterprises

- Historic county industry specific employment data used to develop county-specific baseline employment
  - Bureau of Labor Statistics
- Use industry specific employment growth rates by Workforce Investment Area (WIA) from 2014-2024
  - Ten WIAs
  - Projections through 2060 developed in collaboration
    - with MDNR Economist
    - Missouri Economic Research and Information Center

Regional Profiles



# Scale of Surface Water Analysis

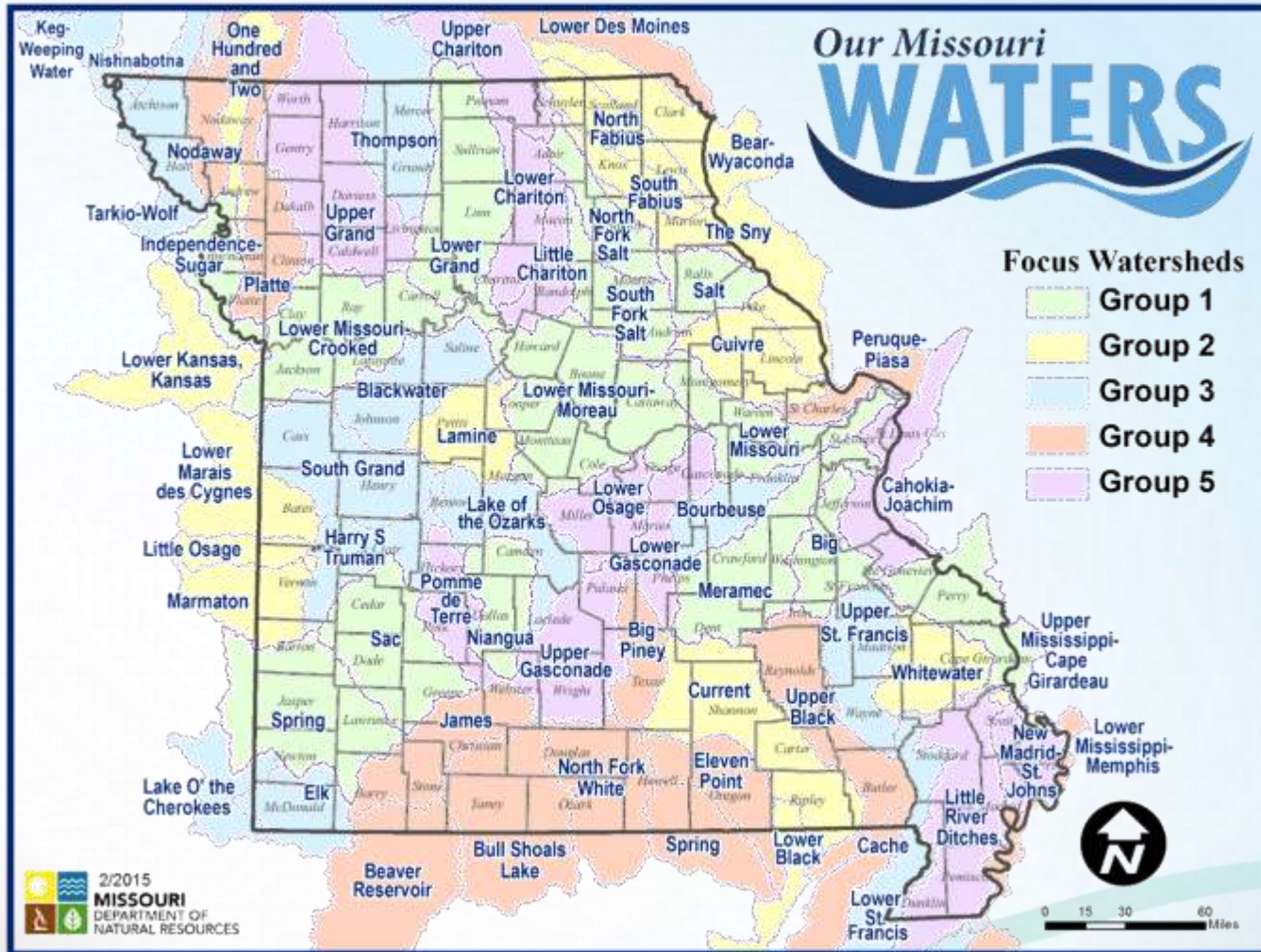
## Missouri HUC-4

- Includes 11 Watersheds
  - some are small portions of watersheds which cross state boundaries



# Scale of Surface Water Analysis

## Missouri HUC-8 and Our Missouri Waters



# Scale of Analysis

- Surface Water Analysis: HUC hydrologic units
- Groundwater Analysis: Aquifer

County X									
Sector	Name	Withdrawal Location	Volume	2010	2020	2030	2040	2050	2060
Municipalities	A	Aquifer	GPCD		Population growth rate →				
	B	Aquifer	GPCD						
		HUC 1	GPCD						
	C	HUC 2	GPCD		Population growth rate →				
SSR		Aquifer	GPCD						
Industrial	A	Aquifer	GED		Employment growth rate (industry specific?) →				
	B	HUC 2	GED						
Agriculture	Irrigation	Aquifer	GPD		Ag growth rate →				
	Irrigation	HUC 1	GPD						
	Livestock	HUC 2	GPD						
	County Total $\Sigma$								
	Aquifer $\Sigma$								
	HUC 1 $\Sigma$								
	HUC 2 $\Sigma$								



# Stakeholder Involvement

## Interagency Task Force (IATF)

- **Purpose:** Appointed representatives to oversee the Plan
- Members also can be assigned to a Technical Workgroup as a main liaison

## Technical Workgroups

- **Workgroups:** Water Quality, Aquatic Species and Environmental Flows, Agricultural Demands, Infrastructure, Municipal, Industrial, and Non-Consumptive Use

# Stakeholder Involvement & Public Outreach Meetings



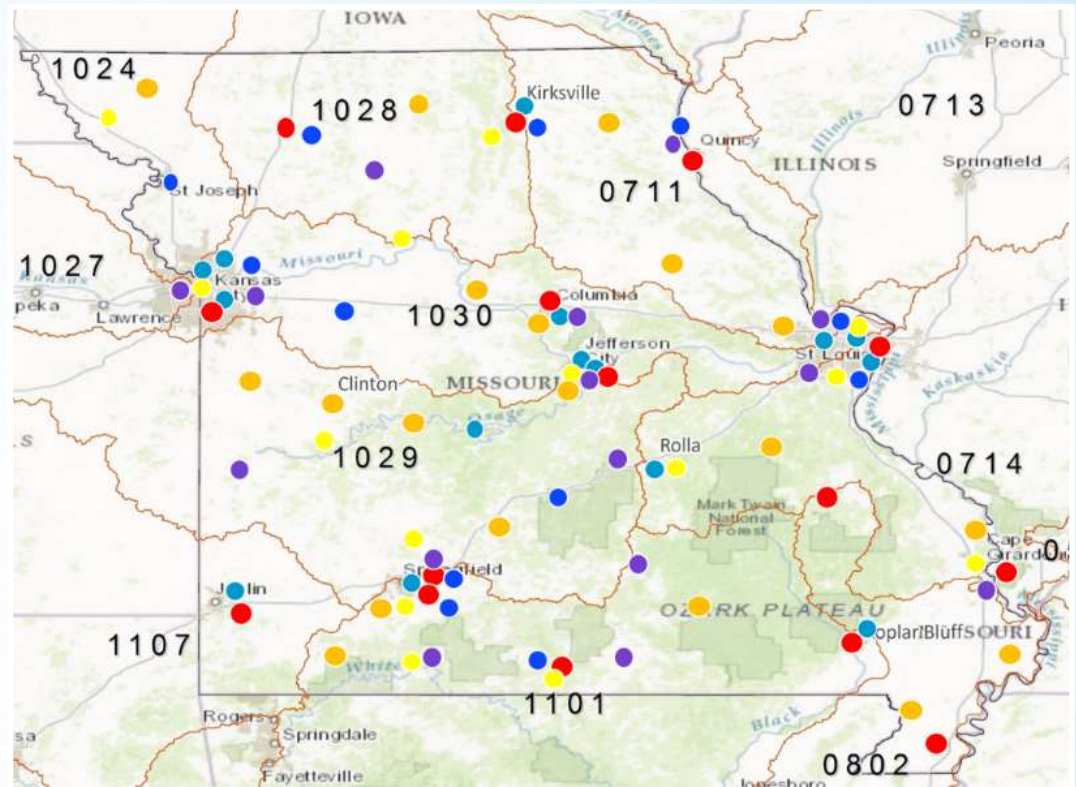
- Utilize existing platforms (up to 28 Meetings)
- Anticipate 50 attendees per meeting
- Standard presentation
- Standard Fact Sheet



# Missouri Water Plan Update: Stakeholder Interviews

- Current Phase: Interview 60-80 Water Opinion Leaders throughout MO
  - Large Water Users
  - Opinion Leaders
  - Active Stakeholders

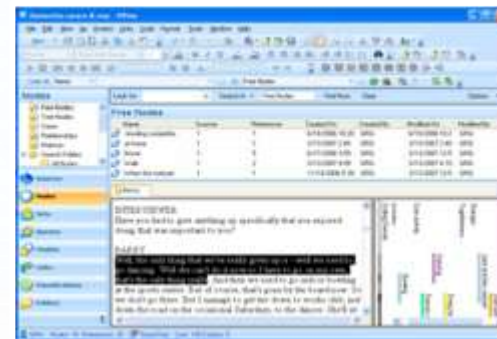
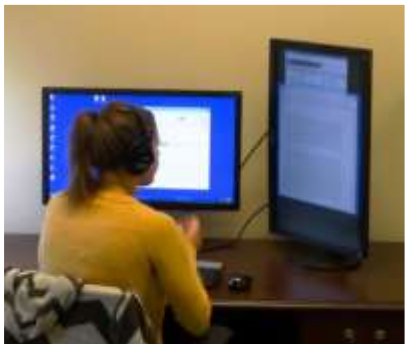
*We drive to them  
Face-to-face in their locations  
Their time schedule  
No time limits*



# Missouri Water Plan Update: Stakeholder Interviews

*We Speak with opinion leaders,  
then listen closely and thoroughly*

- **Engage:** Key Stakeholders to learn water priorities
- **Capture:** All is Recorded, transcribed, and documented
- **Drive Data:** Build large databases for in-depth analyses
- **Labor Intensive**



# Missouri Water Plan Update: Stakeholder Involvement

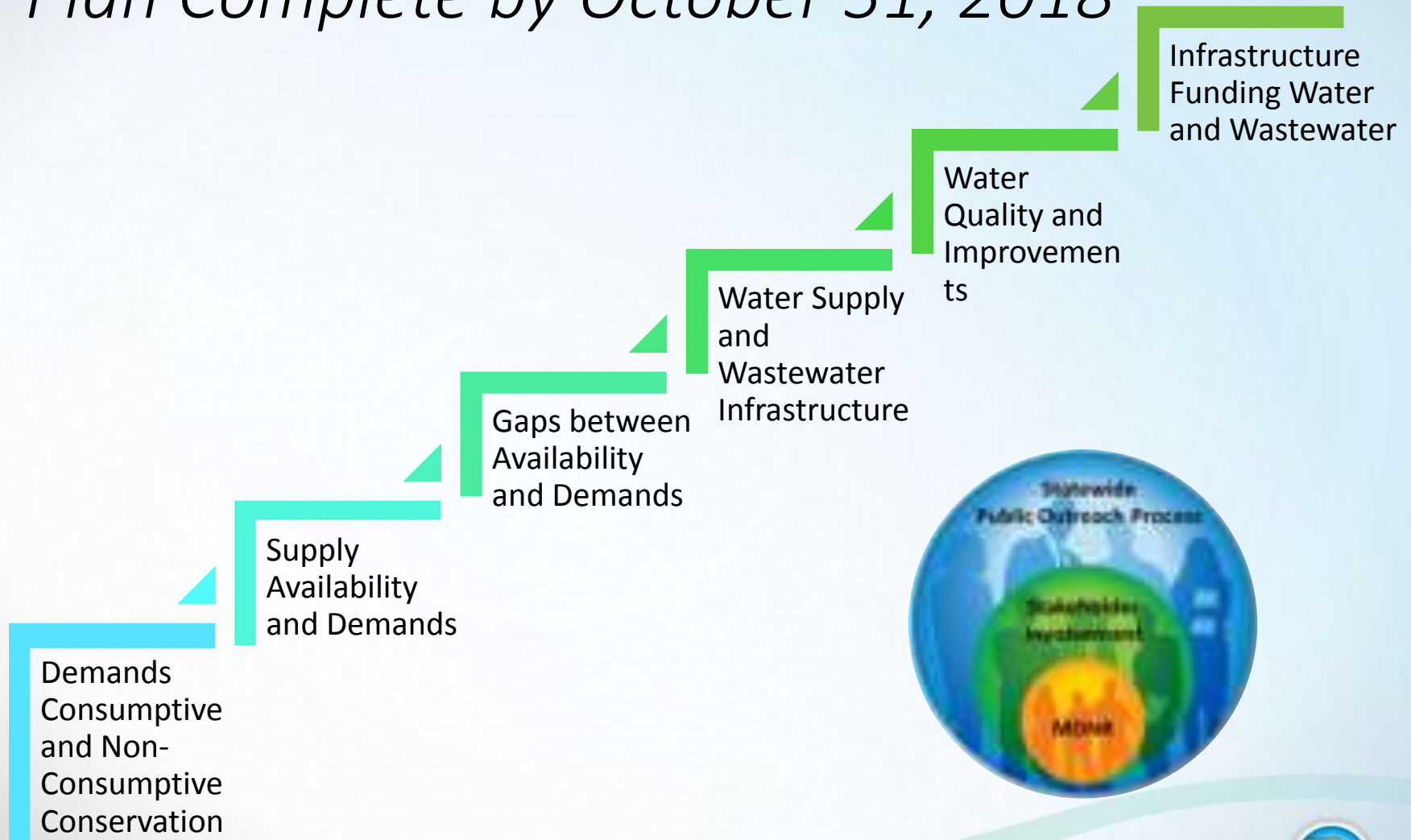
## *Project will Document: Regional & User-Specific*

- Current & anticipated future water uses
- Priorities areas of concern
- Infrastructure needs
- Past events that shape current beliefs
- Points of conflict, Sensitive issues
- Ideas for solutions/priority projects for current and anticipated problems
- Names of persons who should be involved (e.g., technical advisory capacity, directly informed, etc.)
- Other specific requests from the technical advisory groups or DNR



# Next Steps

*Plan Complete by October 31, 2018*



# Questions & Feedback



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