Water Strategy

CMAP ENR Committee

March 2017

ON TO 2050

Water Strategy

Today

- Issues and Challenges
- Draft Policy Framework

Organization

- Water quality: watershed planning; wastewater planning; streams, rivers, lakes, and Lake Michigan
- Water supply: sources, quantity & quality, conservation, management

CMAP

ON TO 2050

Water Strategy Outline

1. Intro: value and relevance of water resources to the region
2. How water resources have been addressed
   - Regulatory context
   - Previous regional planning efforts
     - Strategic Plan for Water Resource Management (NIPC)
     - Water 2050
     - GO TO 2040
   - Current CMAP role and activities
     - Coordination with IEPA: watersheds, lakes, WQMP, wastewater planning
     - Local Technical Assistance program
     - Other regional scale planning and policy initiatives
     - ON TO 2050 topical integration
   - Emerging contexts: Climate change and resilience; IWRM
3. Issues and challenges
4. Policy framework

CMAP

ON TO 2050

Issues and Challenges

Water Quality

- Management and coordination
- Point and nonpoint source pollution
- Infrastructure and facilities
- Waterways, waterbodies and habitat

Water Supply

- Water availability and quality constraints
- Uncoordinated withdrawal management
- Lack of coordinated source protection
- Deferred infrastructure maintenance

ON TO 2050

Water Quality Issues and Challenges

Management and coordination

1. *Water resources are not meeting goals, standards, or designated uses*
2. Lack of state and regional funding, coordination, and good data
3. Watershed-based plans are not adequately implemented
4. Planning and development policies and ordinances are inadequate
5. The regional governing document (AWQMP) is out of date

Point and nonpoint source pollution

1. MS4 and nonpoint source standards and programs are inadequate
2. Emerging pollutants present new challenges
3. Nutrients and chlorides are top concerns, and many other impairments exist

Water Quality Issues and Challenges

Use Attainment Status

EPA Designated Uses	*Fully Supporting*				*Not Supporting (Impaired)*				*Not Assessed*				Totals	
	Streams (mi)	(%)	Lakes (ac)	(%)	Streams (mi)	(%)	Lakes (ac)	(%)	Streams (mi)	(%)	Lakes (ac)	(%)	Streams (mi)	Lakes (ac)
Aesthetic Quality	794	42	2,417	10	110	6	17,026	68	979	52	5,331	21	1,883	25,165
Aquatic Life	528	29	18,636	76	850	47	747	3	418	23	4,800	20	1,796	24,586
Indigenous Aquatic Life	14	16	592	100	73	84	---	0	---	0	---	0	86	592
Fish Consumption	---	0	2,528	10	505	27	10,679	42	1,378	73	11,970	48	1,883	25,178
Secondary Contact	22	1	1,111	4	---	0	---	0	1,861	99	24,067	96	1,883	25,178
Primary Contact Recreation	22	1	1,111	5	573	32	710	3	1,201	67	22,765	93	1,796	24,586
Public and Food Processing Water Supplies*	25	100	2,417	10	---	0	---	---	---	0	---	---	25	---
Total Miles/Acres	**1,405**	15	**26,394**	21	**2,111**	23	**29,162**	23	**5,836**	62	**68,932**	55	**9,352**	**125,296**

Top 5 Stream Impairment Causes: Fecal Coliform: 573mi | Mercury: 385mi | Alteration in stream-side/littoral vegetative cover: 327mi | Aldrin: 133mi | PCBs: 120mi
& **Sources**: Unknown: 408mi | Atmospheric Deposition: 331mi | Urban Runoff / Storm Sewers: 230mi | Contaminated Sediments: 255mi | CSOs: 220mi

Top 5 Lake Impairment Causes: Phosphorus: 10,603ac | Mercury: 5,988ac | Aquatic Plants (Macrophytes): 4,771ac | PCBs: 4,692ac | Aquatic Algae: 1,915ac
& **Sources**: Unknown: 8,437ac | Atmospheric Deposition: 5,552ac | Dredging: 3,763ac | Agriculture: 2,862ac | Crop Production: 2,699ac

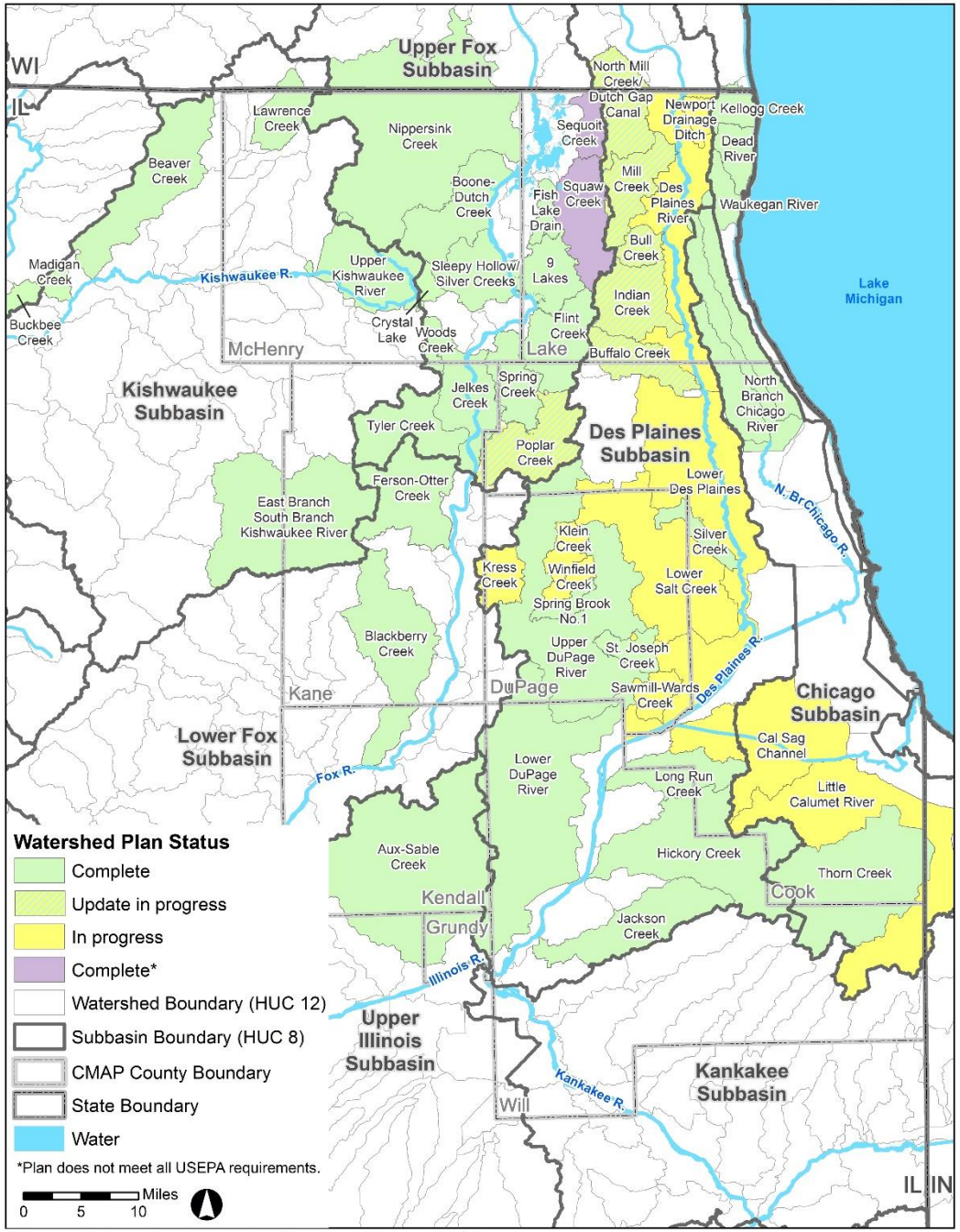
Source: Illinois Integrated Water Quality Report and Section 303(d) List – Vol I: Surface Water – 2016 (Illinois EPA, 2016)

CMAP

ON TO 2050

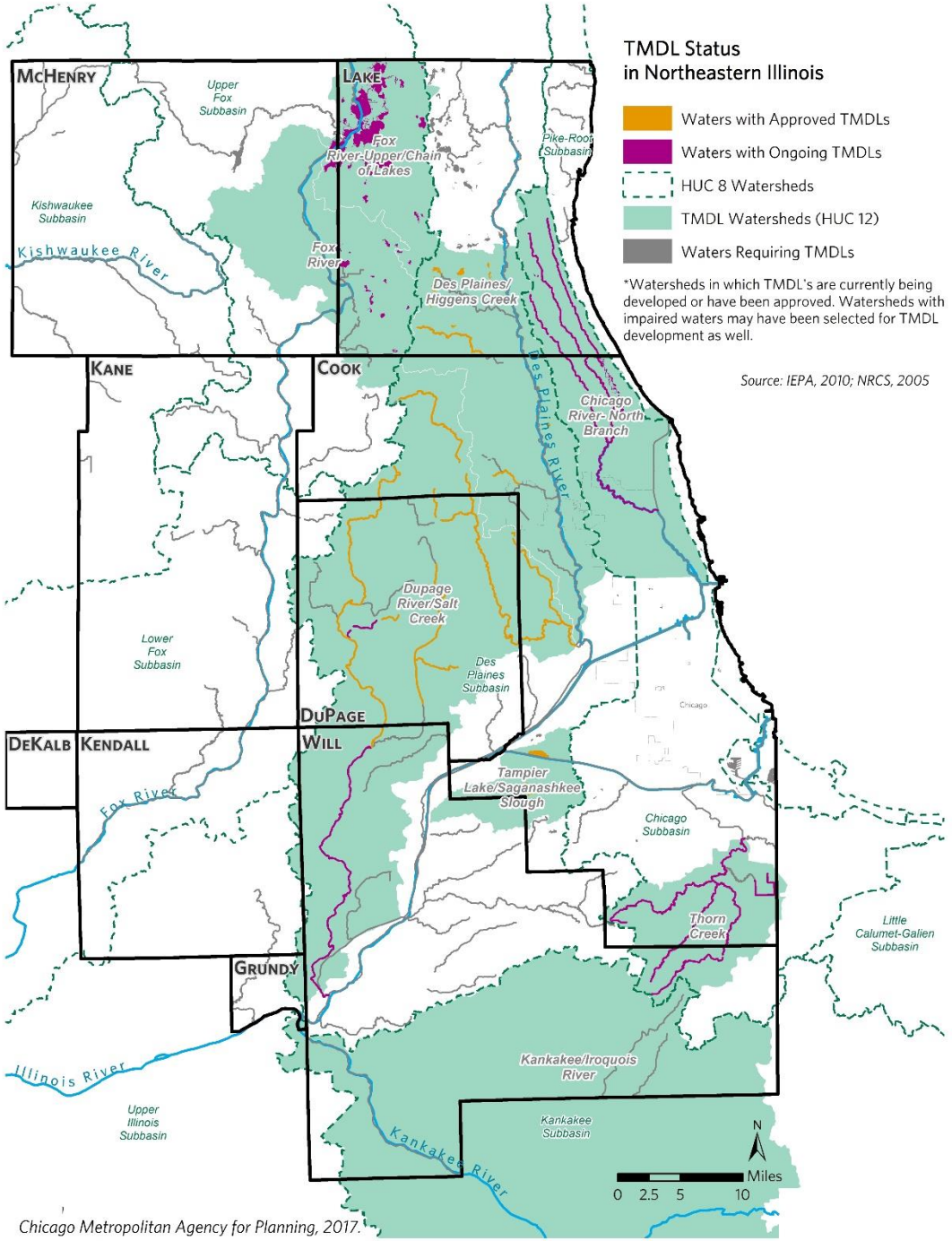
Watershed-based Plans in Northeastern Illinois

As of February 2017



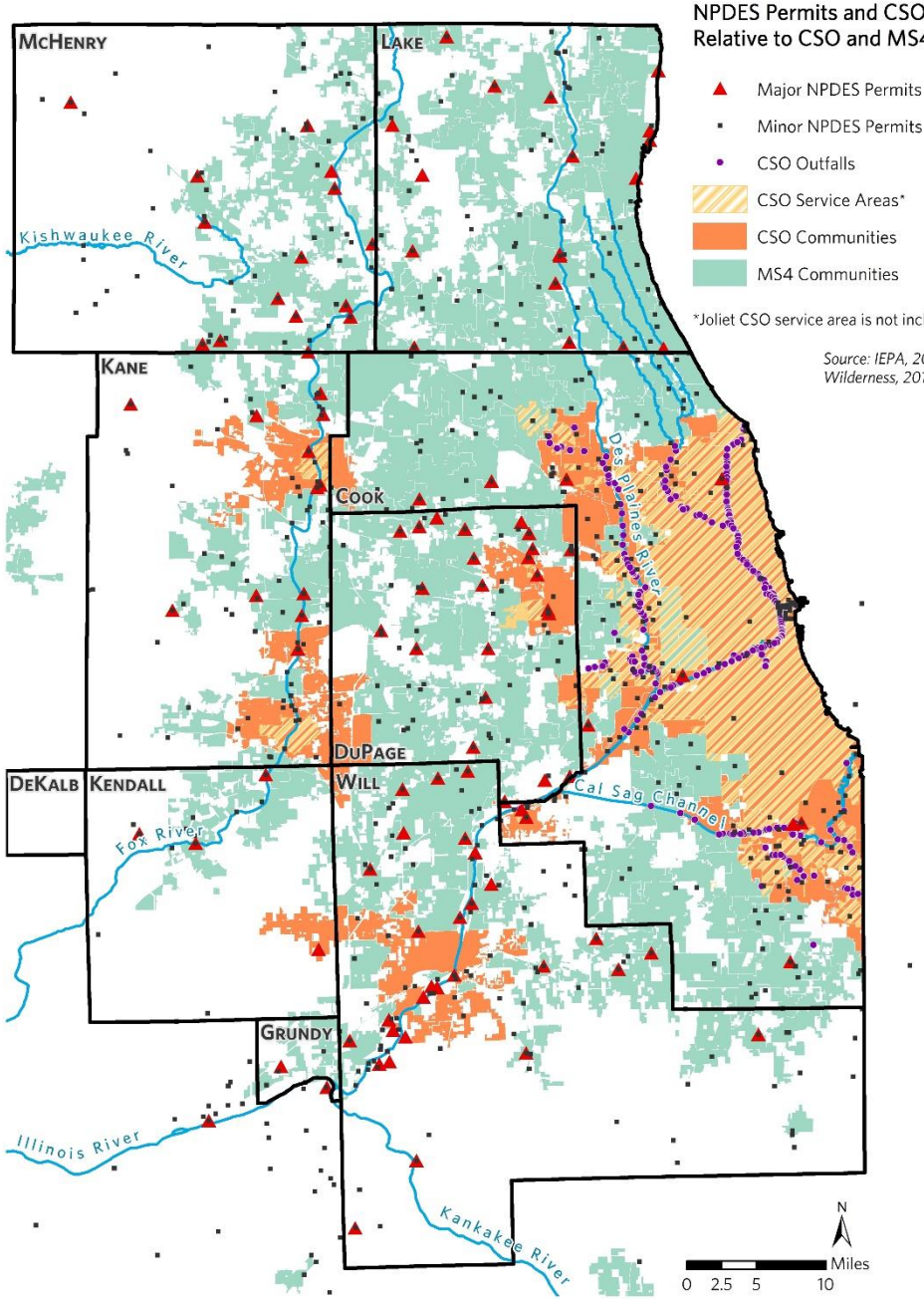
Chicago Metropolitan Agency for Planning, February 2017

TMDL Status in Northeastern Illinois



Chicago Metropolitan Agency for Planning, 2017.

ON TO 2050



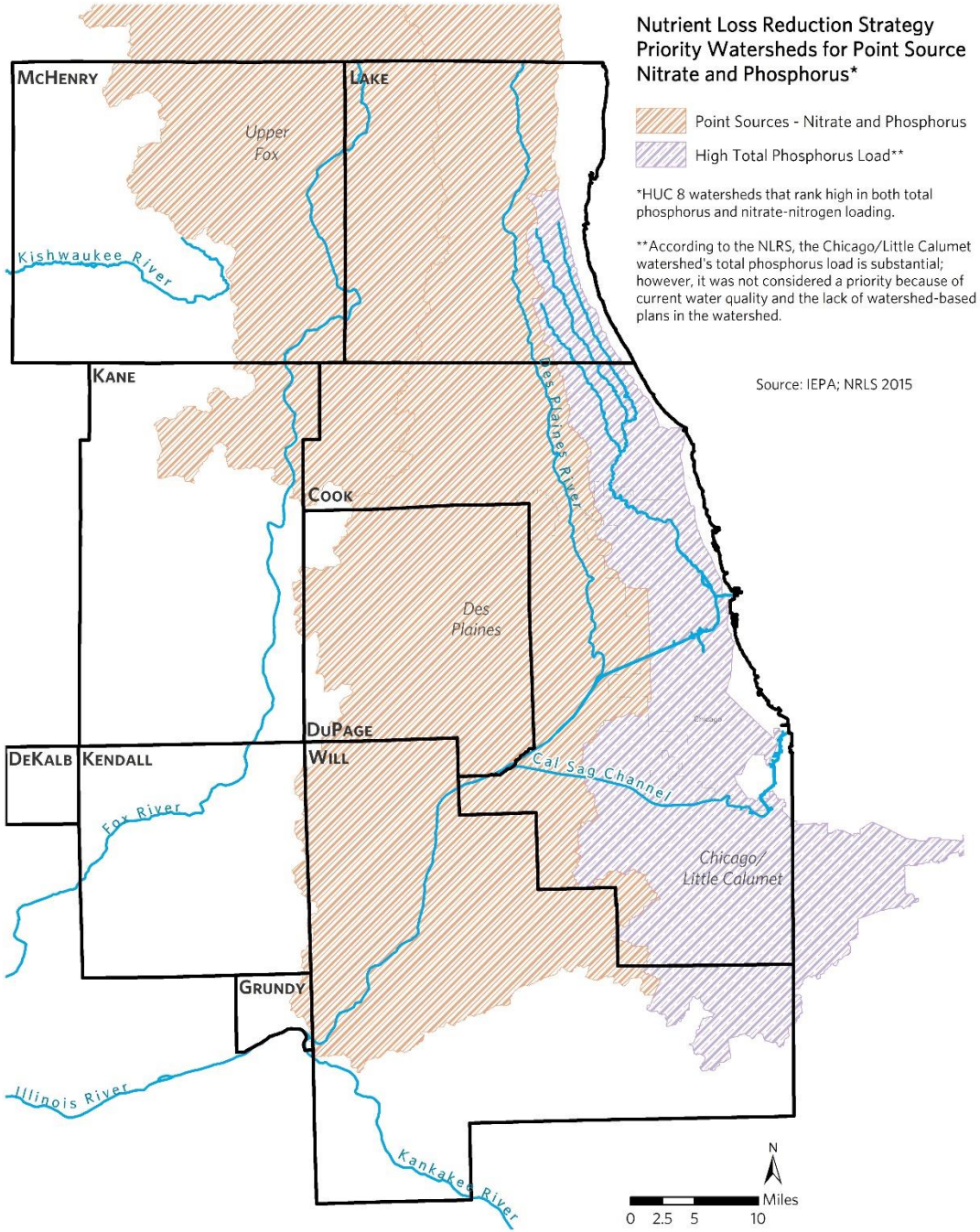
NPDES Permits and CSO Outfalls Relative to CSO and MS4 Communities

- Major NPDES Permits
- Minor NPDES Permits
- CSO Outfalls
- CSO Service Areas*
- CSO Communities
- MS4 Communities

*Joliet CSO service area is not included in this map.

Source: IEPA, 2014; Chicago Wilderness, 2017

Chicago Metropolitan Agency for Planning, 2017.



Nutrient Loss Reduction Strategy Priority Watersheds for Point Source Nitrate and Phosphorus*

- Point Sources - Nitrate and Phosphorus
- High Total Phosphorus Load**

*HUC 8 watersheds that rank high in both total phosphorus and nitrate-nitrogen loading.

**According to the NLRS, the Chicago/Little Calumet watershed's total phosphorus load is substantial; however, it was not considered a priority because of current water quality and the lack of watershed-based plans in the watershed.

Source: IEPA; NRLS 2015

Chicago Metropolitan Agency for Planning, 2017.

ON TO 2050

Water Quality Issues and Challenges

Infrastructure and facilities

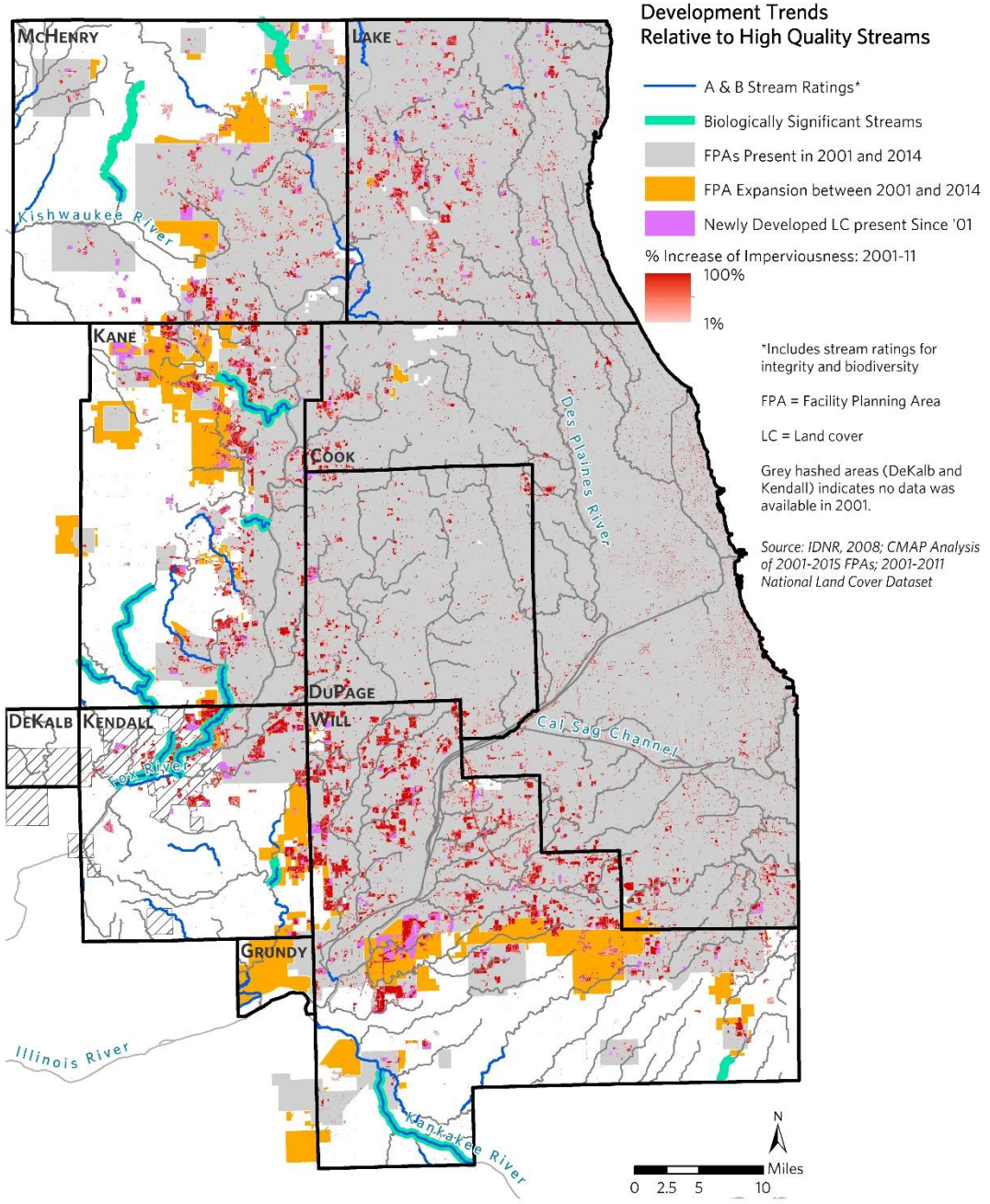
1. Aging systems require significant investment
2. Septic and small systems lack data and enforcement
3. Resource recovery is underutilized

Waterways, waterbodies and habitat

1. Water resources continue to be degraded from multiple causes
2. Sensitive and high quality systems are inadequately protected
3. Inadequate resources exist to properly manage and restore
4. Recreational and commercial uses contribute to challenges
5. Habitat degradation, invasive species, and public health are top Lake Michigan challenges

CMAP

ON TO 2050



Chicago Metropolitan Agency for Planning, 2017.

CMAP

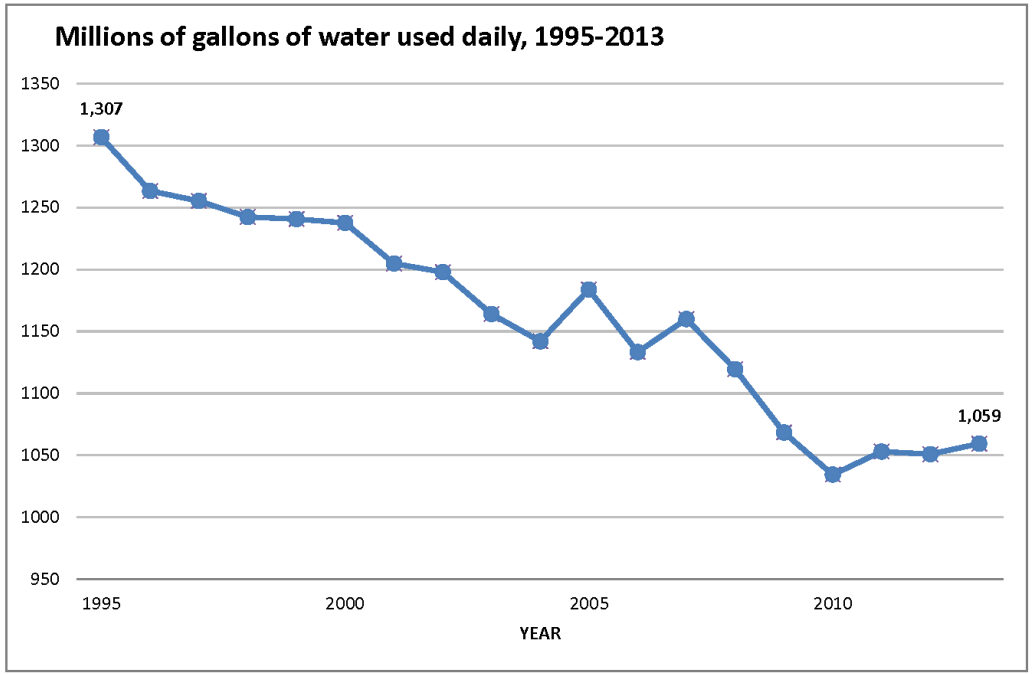
ON TO 2050

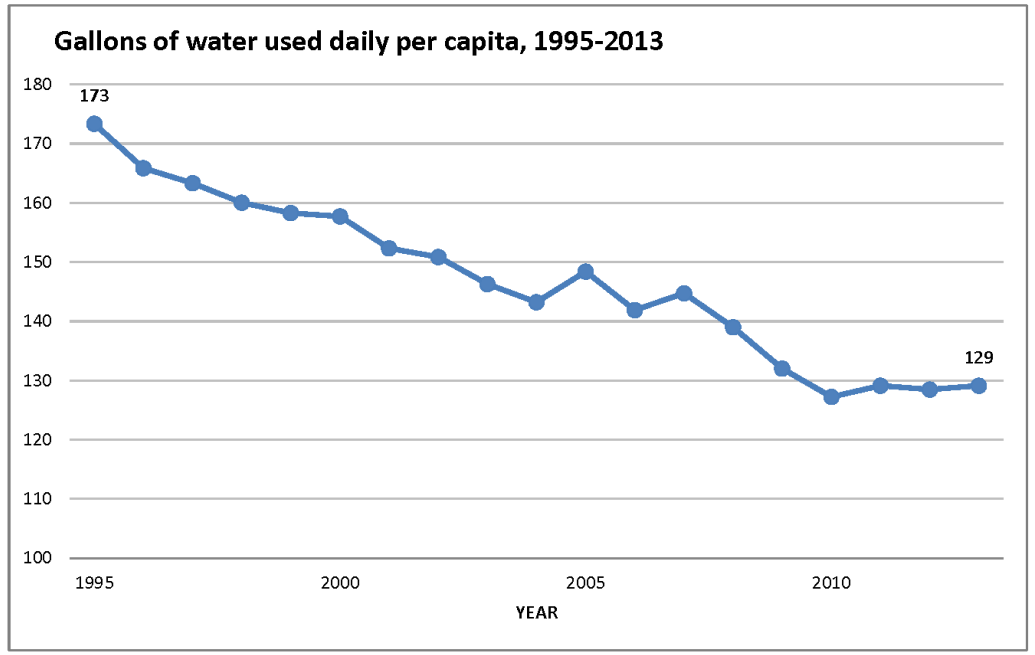
Water Supply Issues and Challenges

Water availability and quality constraints

1. Drawdown of deep sandstone aquifers (+recharge occurs out west)
2. Drawdown and contamination of shallow aquifers
3. Limited Lake Michigan allocation
4. Rivers may be underutilized and polluted
5. Lack of data and understanding (perception problem) about water supply

ON TO 2050

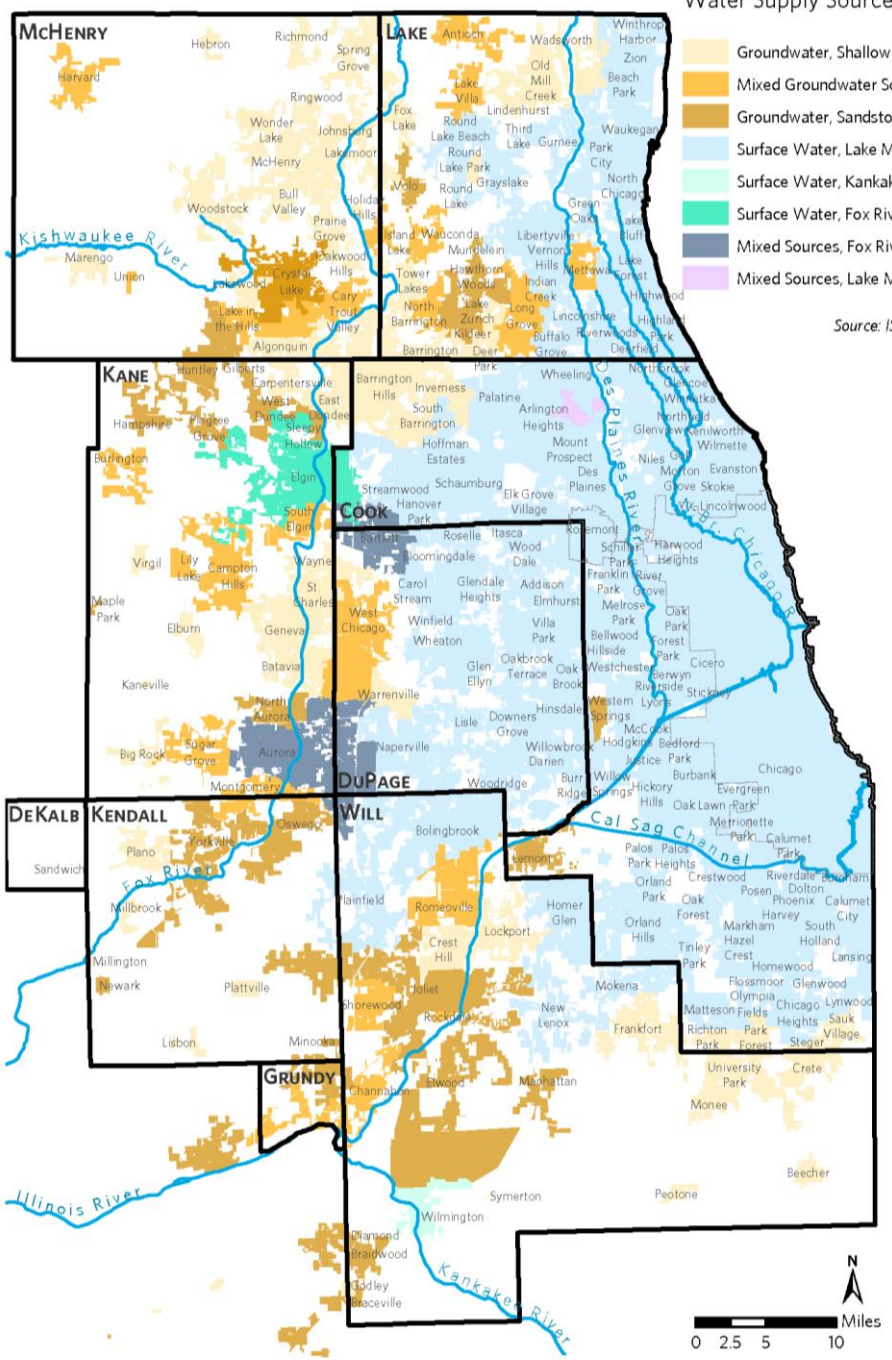




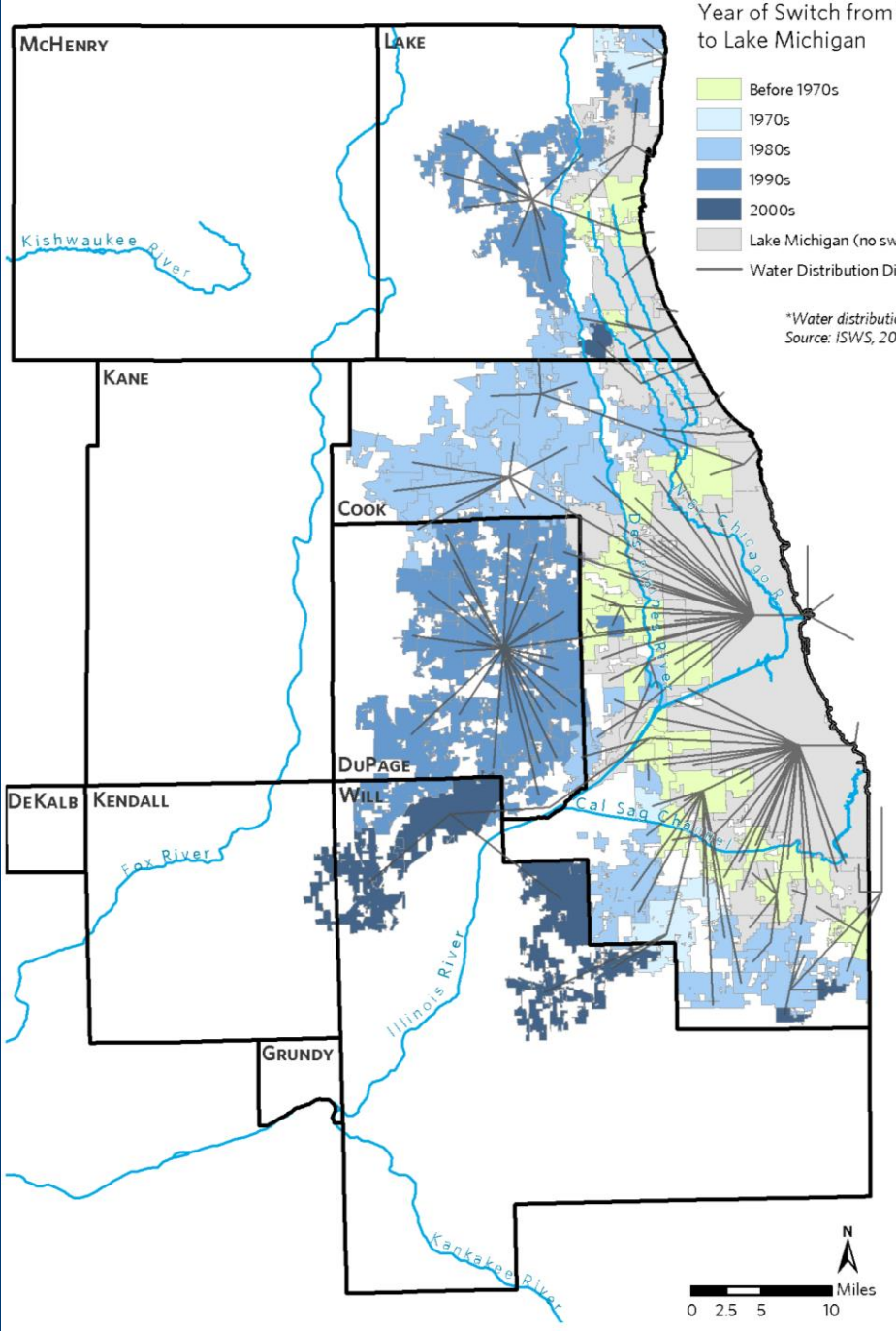
Source: Illinois State Water Survey

CMAP

ON TO 2050



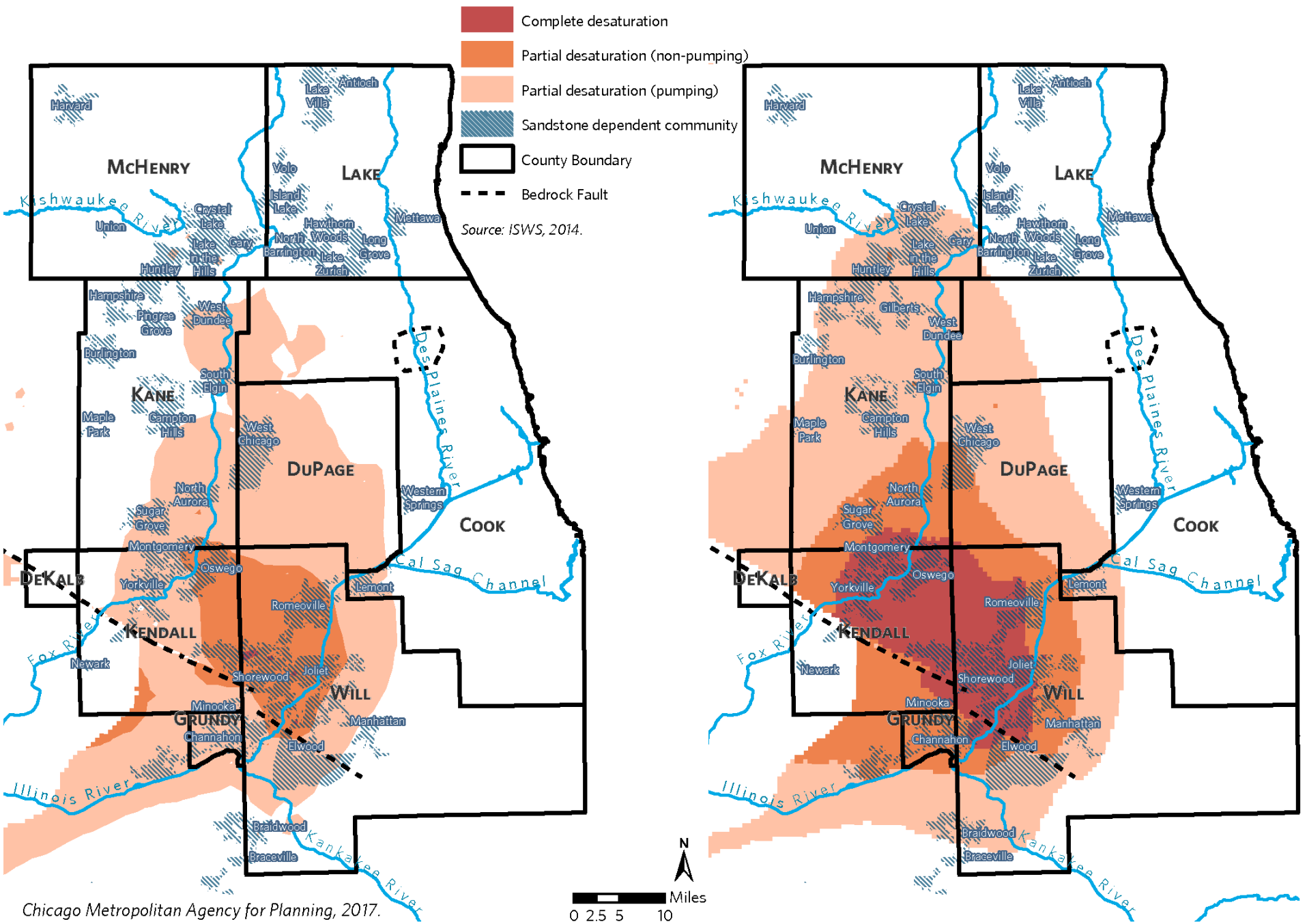
Chicago Metropolitan Agency for Planning, 2017.



Chicago Metropolitan Agency for Planning, 2017.

ON TO 2050

St. Peter Sandstone Desaturation, 2014 and 2050



Chicago Metropolitan Agency for Planning, 2017.

CMAP

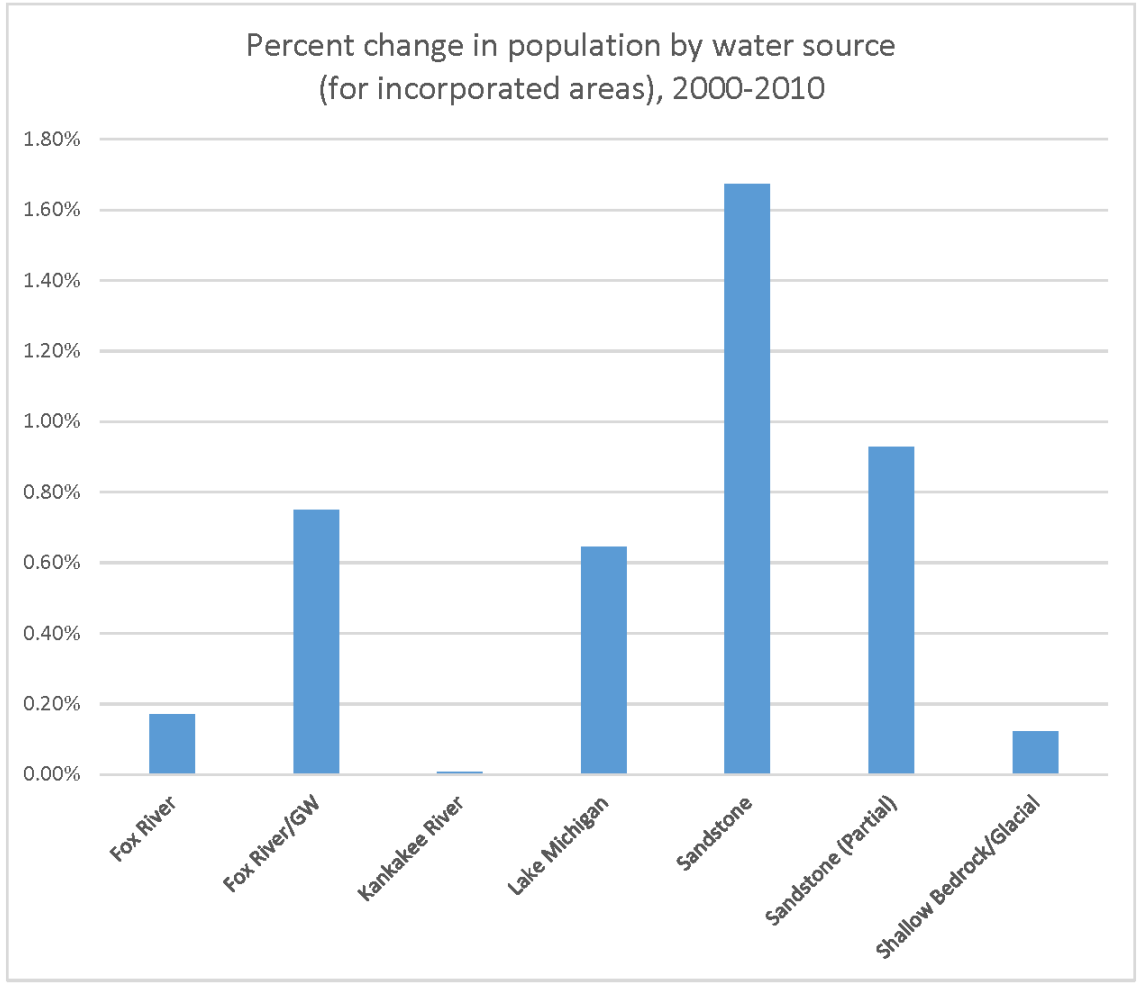
ON TO 2050

Water Supply Issues and Challenges

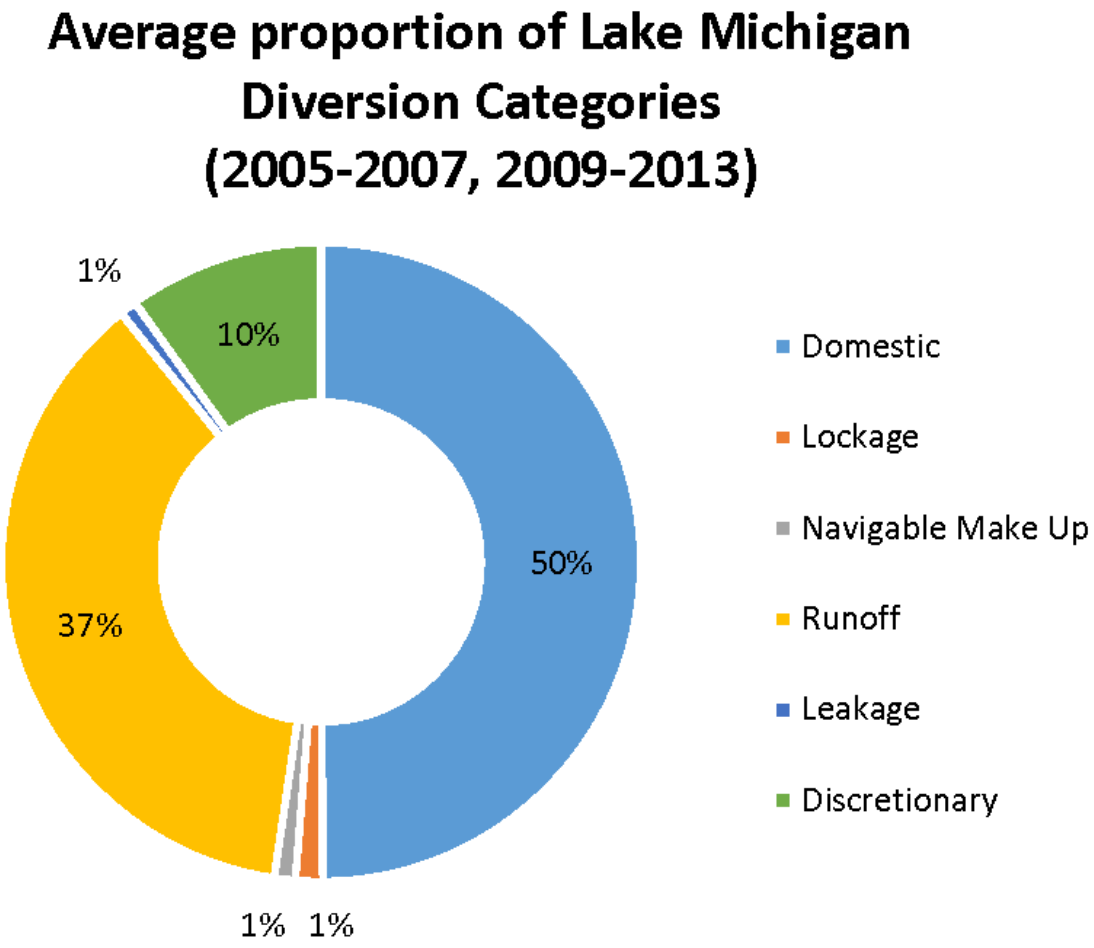
Uncoordinated withdrawal management

1. Groundwater withdrawals largely unknown and unmanaged
2. Inefficient use of Lake Michigan allocation
3. Unharnessed potential of water reuse
4. Limited use of conservation practices

Water Supply Issues and Challenges



Note: Accounts for changes in water source (from groundwater to Lake Michigan) for the following communities: Bolingbrook, Ford Heights, Homer Glen, Mokena, New Lenox, Plainfield, Riverwoods, and South Chicago Heights.



Source: USACE, Lake Michigan Diversion Accounting reports
Report unavailable for Water Year 2008, 2014, and 2015.

ON TO 2050

Water Supply Issues and Challenges

Lack of coordinated source protection

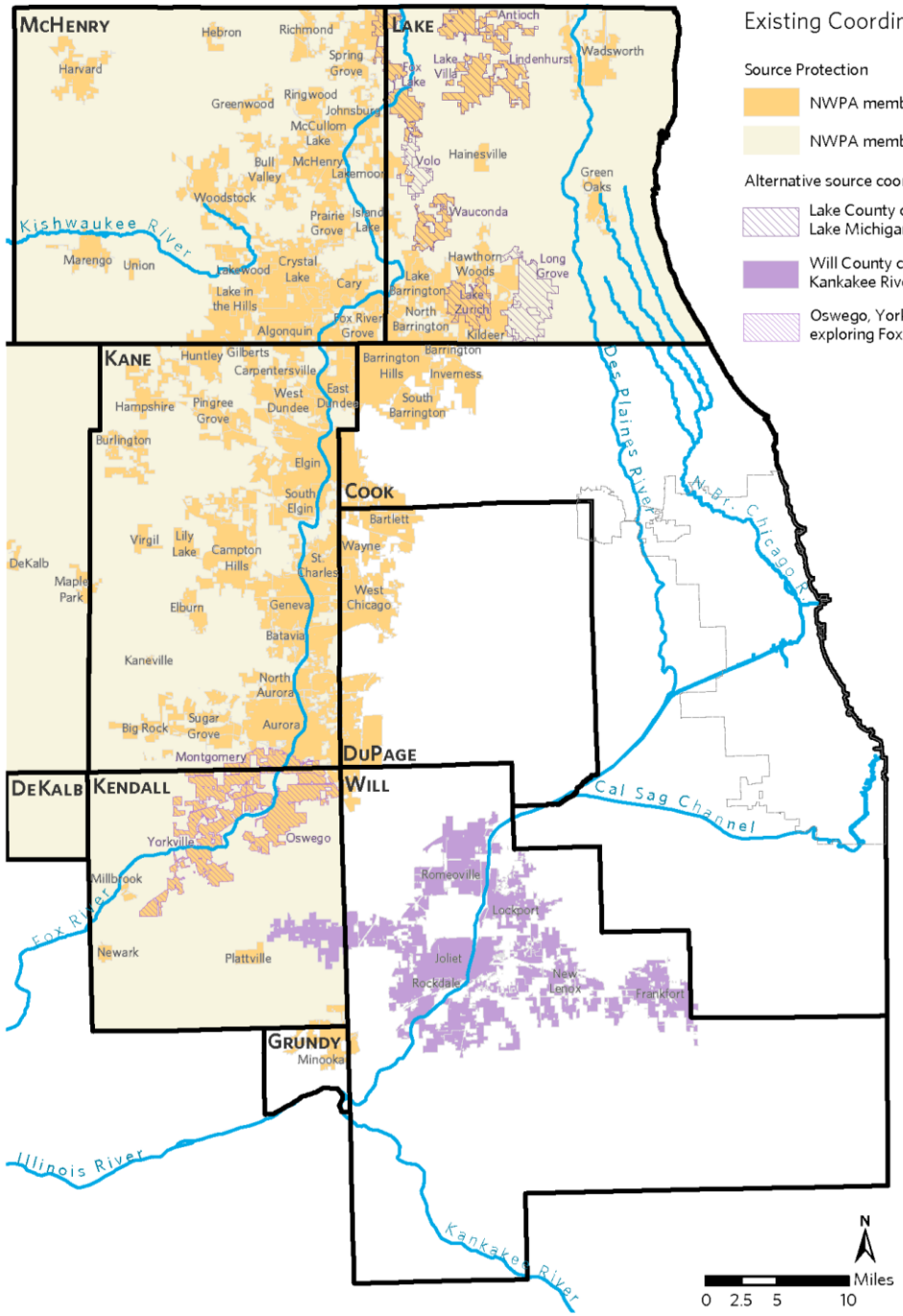
1. Development impacts groundwater demand and quality
2. Development impacts surface water quality

Deferred infrastructure maintenance

1. Aging infrastructure and loss of water and revenue
2. Lack of proper pricing to cover full cost of provision and management
3. Lead contamination

CMAP

ON TO 2050



Chicago Metropolitan Agency for Planning, 2017.

CMAP

ON TO 2050

CMAP Policy Framework

- Planning, Coordination and Management
- Infrastructure and Facilities
- Protection from Degradation and Depletion

CMAP

ON TO 2050

CMAP Policy Framework

Planning, Coordination and Management

- Reframe vision and policy framework to highlight importance of water to region, climate and resilience, collaborative approaches, and *integration*
- Improve coordination of agencies, programs, & funding for efficiency, leverage, and multiple objectives
  - Coordinate IEPA, IDNR, FEMA, other programs …
  - Broaden flexibility of SRF programs
  - Sustainable funding for regional & subregional planning and coordination
  - Coordinate stormwater and wastewater management for WQ
  - Coordinate source water users / withdrawal management (+allocations, prioritization of withdrawals, etc.)

ON TO 2050

CMAP Policy Framework
Planning, Coordination and Management

- Better utilize planning, policy, regulation, & development practices/standards
  - Regional scale guidance and policy on investment and development
    - Update the AWQMP and wastewater planning approach
  - Use water source and supply data for local and regional planning
  - Multi-jurisdictional, watershed and ‘source-shed’ systems approach to planning and protection (+groundwater recharge areas, river users)
  - Improve local policies and ordinances to better protect water resources, particularly in areas of high quality systems and water supply limitations
  - Broaden stormwater goals / authority / scope of county stormwater agencies (?)

ON TO 2050

CMAP Policy Framework

Planning, Coordination and Management

- Improve data and information collection and sharing
  - Water quality tracking and metrics
  - Water supply / yield and demand analysis and forecasting for all sources
  - Groundwater availability, recharge, and withdrawal information
  - Shallow groundwater sources and stream baseflow needs
  - Develop information on feasibility and cost of water supply strategies (reuse, conservation, source switching, deeper wells, etc.)

ON TO 2050

CMAP Policy Framework

Planning, Coordination and Management

- Improve environmental quality for vulnerable, underserved, & excluded communities
  - Human health / environmental justice
  - Safe, affordable drinking water and other infrastructure
  - Climate impacts

CMAP

ON TO 2050

CMAP Policy Framework
Infrastructure and Facilities

- Invest in and properly price infrastructure, management, and service for greater efficiency and resilience
  - Coordinate and leverage improvements and investment (‘dig once’)
  - Full cost pricing
  - Asset management to reduce water loss
  - Innovative financing, including PPPs, SRFs, etc.
  - Consolidation & service sharing
- Support small (+septic) and large (combined/CSO/LTCP) system improvements
- Capture, recover, and reuse water, nutrients, gas, energy, etc.

CMAP

ON TO 2050

CMAP Policy Framework

Prevent Degradation and Depletion

- Strengthen and update watershed approach and GI/open space strategies to reduce NPS, improve habitat, & protect water supply
  - Cost-share approaches
  - SRF programs
  - Watershed permitting, water quality trading, stronger MS4 permits
  - Multi-sector approaches, e.g., coordinate stormwater and wastewater mgt
  - Ground and surface water source protection

- Focus on priority pollutants (nutrients, chlorides, emerging, lead…)
  - Point and non point sources: nutrient standards and permits, voluntary and cost share programs (Section 319, voluntary ag practices)
  - Drinking water sources

ON TO 2050

CMAP Policy Framework

Prevent Degradation and Depletion

- Renew attention on waterways, waterbodies, and habitat
  - Focus protection efforts on remaining high quality systems (+headwaters)
  - Better utilize policies, standards, and regulations, including green infrastructure approaches
  - Revise state law to explicitly protect aquatic habitat and natural conditions on more streams and rivers
  - Enhance waterways and riparian zones for all users including recreation, commerce, water supply, habitat, etc.
  - Support net gain of wetlands

ON TO 2050

CMAP Policy Framework

Prevent Degradation and Depletion

- Renew attention on Lake Michigan
  - Invasive / native species (+CAWS)
  - Better manage / optimize Lake Michigan water allocation, water use/loss
  - Coastal habitat and migratory flyway
  - Water quality, fish contamination, and CSOs (+pathogens / beach closures)

- Address groundwater supply quality and quantity
  - Encourage zero-contaminant GW recharge
  - Pursue demand management strategies (focus of Water 2050)
  - Understand groundwater / baseflow dynamics

CMAP

ON TO 2050

Next Steps

- Flesh out policy framework
- Integrate with other strategy papers
  - Stormwater
  - Green Infrastructure Co-Benefits
  - Climate Resilience
  - Lands in Transition
- Propose indicators
- Share draft with ENR and other stakeholders
- Finalize

CMAP

ON TO 2050

Questions & Comments

CMAP