



Chicago Metropolitan  
Agency for Planning

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# ***Water Loss Among Lake Michigan Permittees in Illinois – updated!***

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*Elgin, Illinois*

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# Acknowledgments

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- \* CMAP's Local Technical Assistance (LTA) program:  
*FHWA, FTA, US Dept. HUD, IDOT, and the Chicago Community Trust*
  - \* Center for Neighborhood Technology  
*The Joyce Foundation*
  - \* IDNR, Office of Water Resources, Lake Michigan Water Allocation Program Office
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# Project Purpose

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*To assist the IDNR, OWR, LMWAP with developing new insight to permittee water-loss practices and challenges.*

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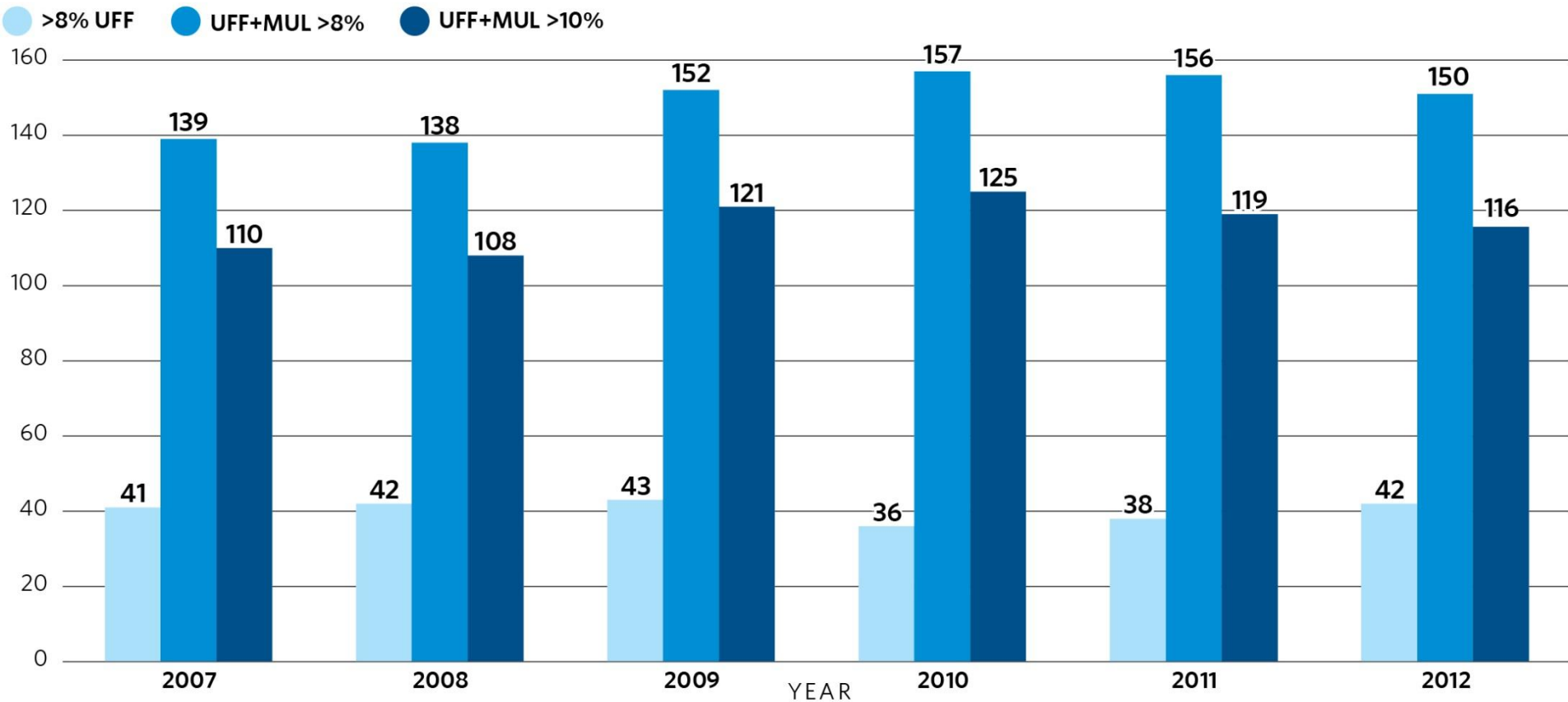
# Project Objectives

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- 1) LMO-2 data analysis: 2007 – 2012
  - 2) Survey questionnaire: census of community water suppliers
  - 3) Site visits with select permittees
  - 4) Site visits to introduce the AWWA M36 water-audit methodology
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# Obj. #1: Data Analysis: Permittee Water Loss

Permittee water loss relative to current and potential future thresholds, 2007-12, by number of permittees



The composition of permittees varied each year due to reporting and data errors; n=193 in 2007 and 2008, n=194 in 2011, and n=195 in 2009, 2010, and 2012.

MUL: Maximum unavoidable loss; UFF: Unaccounted for flow.

Source: Illinois Department of Natural Resources, 2014.

## Obj. #2: Survey Questionnaire: Responses

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\* Response Rate: 53%

\* Nonresponse bias:

- Two variables:
    - Population – mixed results (i.e., ‘yes’ at 0.05, ‘no’ at 0.01)
    - %UFF – no bias at either p-value
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# Water-Loss Control Policy

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Describe your water department/utility's water-loss control policy (e.g., ordinance, resolution, goal statement) or let us know if no formal policy exists.

(90 respondents)

74% - No formal policy

2% - Yes, it is ...

7% - IDNR 8% UFF standard

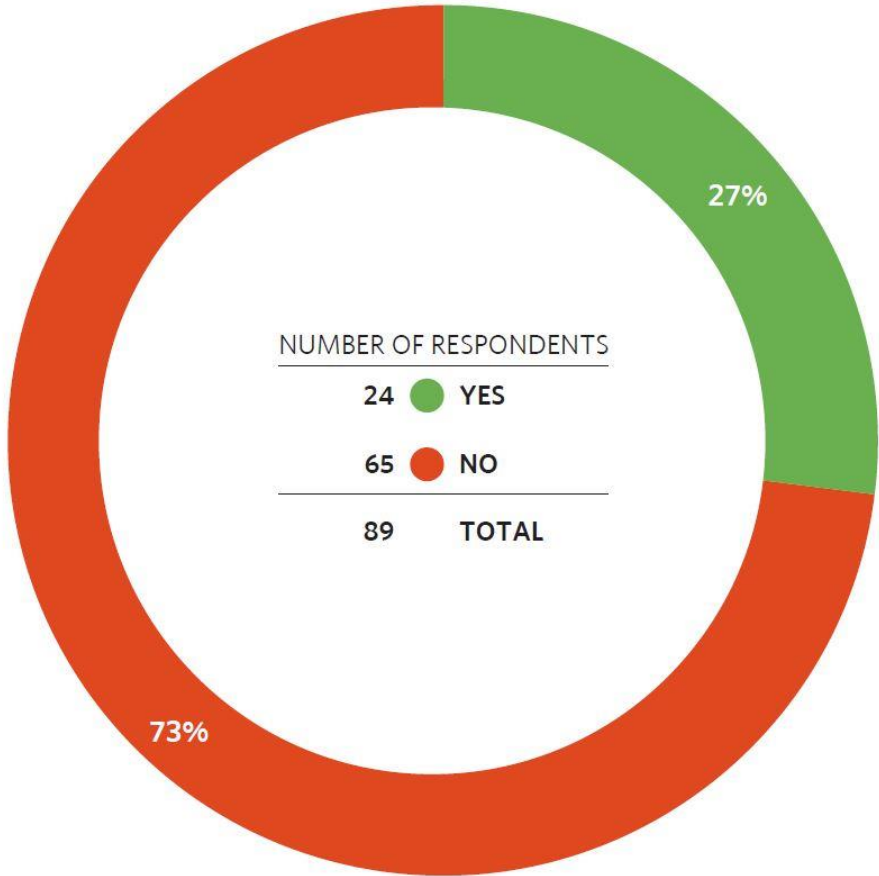
17% - other answer

100%

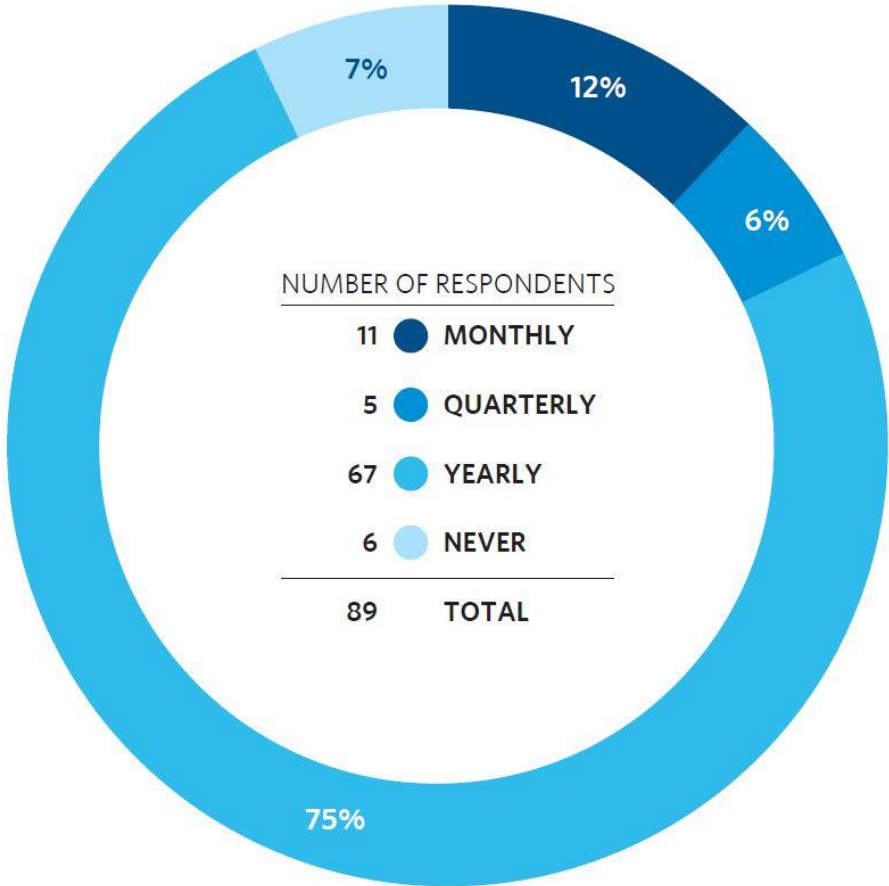
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# Communicating Water Loss

Percentage of permittees communicating water loss information to customers



Frequency of communication with elected officials regarding water-loss information





# Water Rates

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- \* Average vol. charge of \$6.66 / 1,000 gallons (2012)
- \* Most common type of rate structure:  
uniform (volumetric) rate (73% of respond.)
- \* Just 9% use an inverted block rate

# Infrastructure: Funding and Investment

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## *Source of Funding –*

water rate revenue	89%
general obligation bonds	37%
state revolving fund loan	23%
other	9%

*mtoacbs*

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# Infrastructure: Funding and Investment

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*Investment in capital equipment for 3-year period:  
2010-2012 –*

median value:	\$1,500,000
no. of service connections:	6,608
avg. invested / serv. connect.:	\$244.57

# Challenges Faced: Water-Loss Control

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Type of challenge –

funding for & cost of replacement	55%
difficulty in detecting and fixing leaks	16%
water loss not perceived as challenge	16%
4 other specific challenges	5-9%
other	18%

*mtoacbs*

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# Gallons Lost (20112): How Much and Potential Value?

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22.187 billion gallons across 195 CWS permittees\*  
*(source: 2012 LMO-2 forms, UFF)*

Estimated value: \$64.1 – \$147.7 million

*Equivalent to residential needs of 698,712 people!*

*Quartile analysis ... loss more severe with smaller systems!*

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# Site Visits: Practices and Challenges

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Sample size small (n=6)

*A few findings ...*

- \* Rates cover cost of operations but not capital improvements,
  - \* Main limitation: need for more \$ and staff resources,
  - \* Purchasing water lends well to discuss loss in financial terms
  - \* None perform formal audits beyond LMO-2
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# Site Visits:

## Usefulness of AWWA M36

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Sample size small (n=3)

*Insightful findings ...*

- All believe:
- \* this audit would be helpful,
  - \* would not require more staff or new in-house relationships,
  - \* the audit tool could be helpful for in-house discussions with elected officials and budgeting.
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# Conclusions and Recommendations

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## IDNR Regulatory Program ...

- \* request permittees adopt formal water-loss control policy.
  - \* request water-loss info be shared as part of requirement to implement a public program to encourage reduced water use
  - \* increase communication – provide guidance and performance related information, and communicate with city managers in addition to public works staff
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# Conclusions and Recommendations

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## IDNR Regulatory Program ...

- \* strengthen the recommendation to develop water rate structures that discourage excessive water use
  - \* request basic benchmarking for full cost service and annual reporting of benchmarks
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# Benchmarking Metrics

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<i>Metric</i>	<i>Calculation</i>	<i>Benchmark</i>
Operating Ratio	Operating Revenues / Operating Expenses	1.0
Debt Service Coverage Ratio	(Operating Revenues – Operating Expenses) / Debt Service	1.0
Active Debt per Customer	Total Active Debt / Number of Customers	Average
% of Annual Operating Expenditures in Cash Reserve	Cash Reserves / Annual Operating Expenditures	One month

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# Conclusions and Recommendations

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## IDNR Regulatory Program ...

- \* Require use of the M36 water audit method!

## IDNR Assistance and Collaboration ...

- \* provide outreach, education, and technical assistance with the M36 tool,
  - \* State agencies should align programmatic objectives and requirements of permittees/applicants.
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# Thank you!

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## Questions??

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