"Kentucky's Water Infrastructure Status and Needs"

Presentation to
IJC on Natural Resources and Energy

Energy & Environment Cabinet (EEC)

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Kentucky's Water Infrastructure

- ***Water*** is No. 1 Natural Resource:
  - Critical to Kentucky's success:
    - Public Health
    - Economic Development
    - Economic and Environmental Sustainability
    - Quality of Life
- Water infrastructure (WTPs, WWTPs, distribution systems, collection systems, Dams) is critical to the health and economic welfare of the state.
- We will focus on three infrastructure areas today: **Wastewater**, **Drinking Water**, and **Dams.**

Kentucky's Water Infrastructure

- Kentucky has made significant strides in regards to water and wastewater:
  - **Regionalization/Consolidation** of Water and Wastewater Systems:
    - **95+% of Kentuckians provided public water.**
    - Majority of Kentuckians connected to regional sewers.
  - Extensive Infrastructure.
  - Investment in Infrastructure:
    - Current investment isn't sufficient to meet needs.
    - Consolidation of systems still ongoing to relieve unsustainable situations, but these consolidations come with old infrastructure where maintenance has been deferred and new investment is necessary.

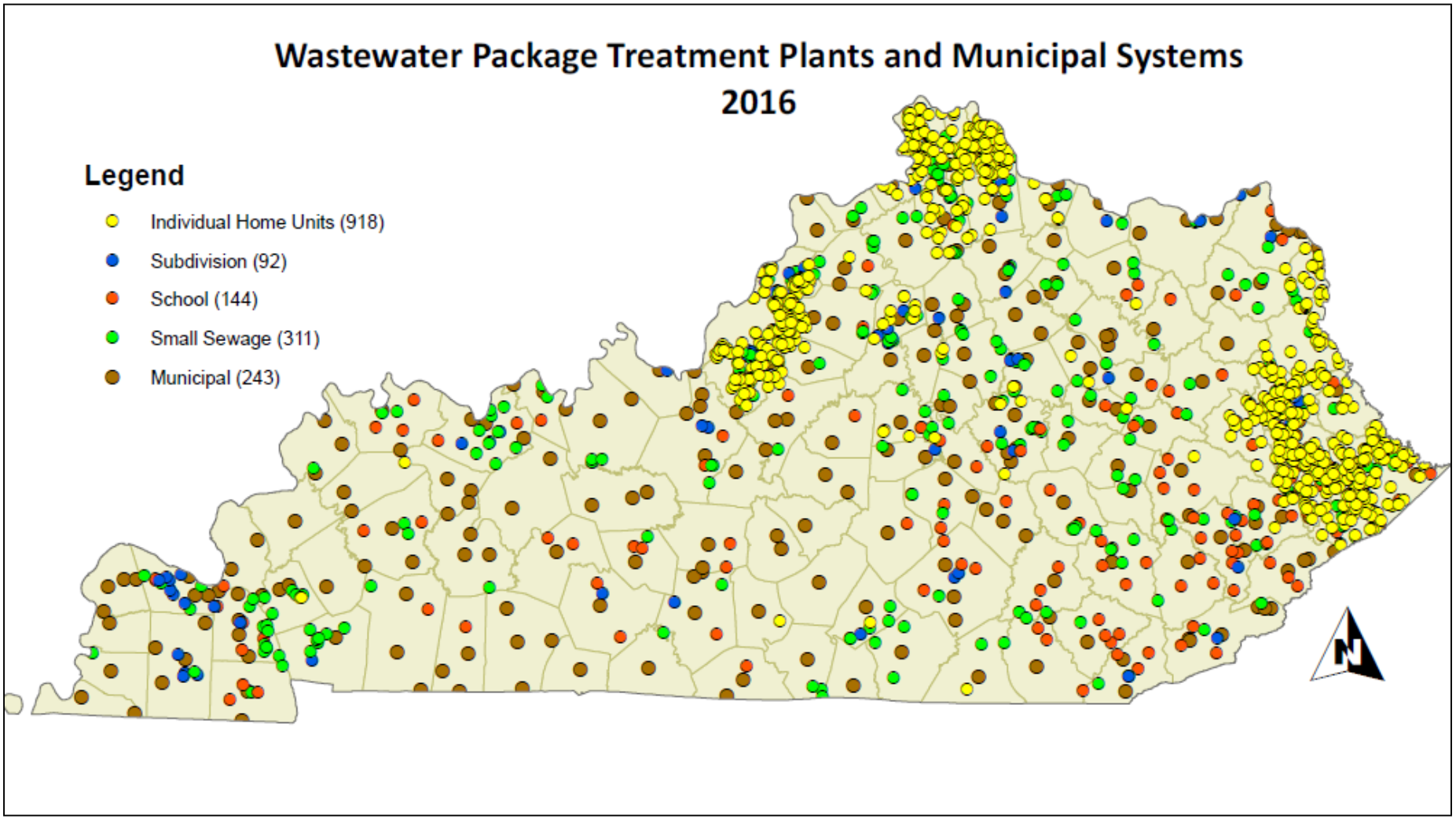
Kentucky's Water Infrastructure

- Technical, Operations, and Compliance records are generally good, but there still remain significant challenges, especially related to infrastructure.
- Kentucky has **compiled extensive data on its water and wastewater infrastructure** unsurpassed by any state:
  - Data that is able to be used for funding decisions, asset management, planning, etc.
  - We are positioned to improve the long-term management of our infrastructure.

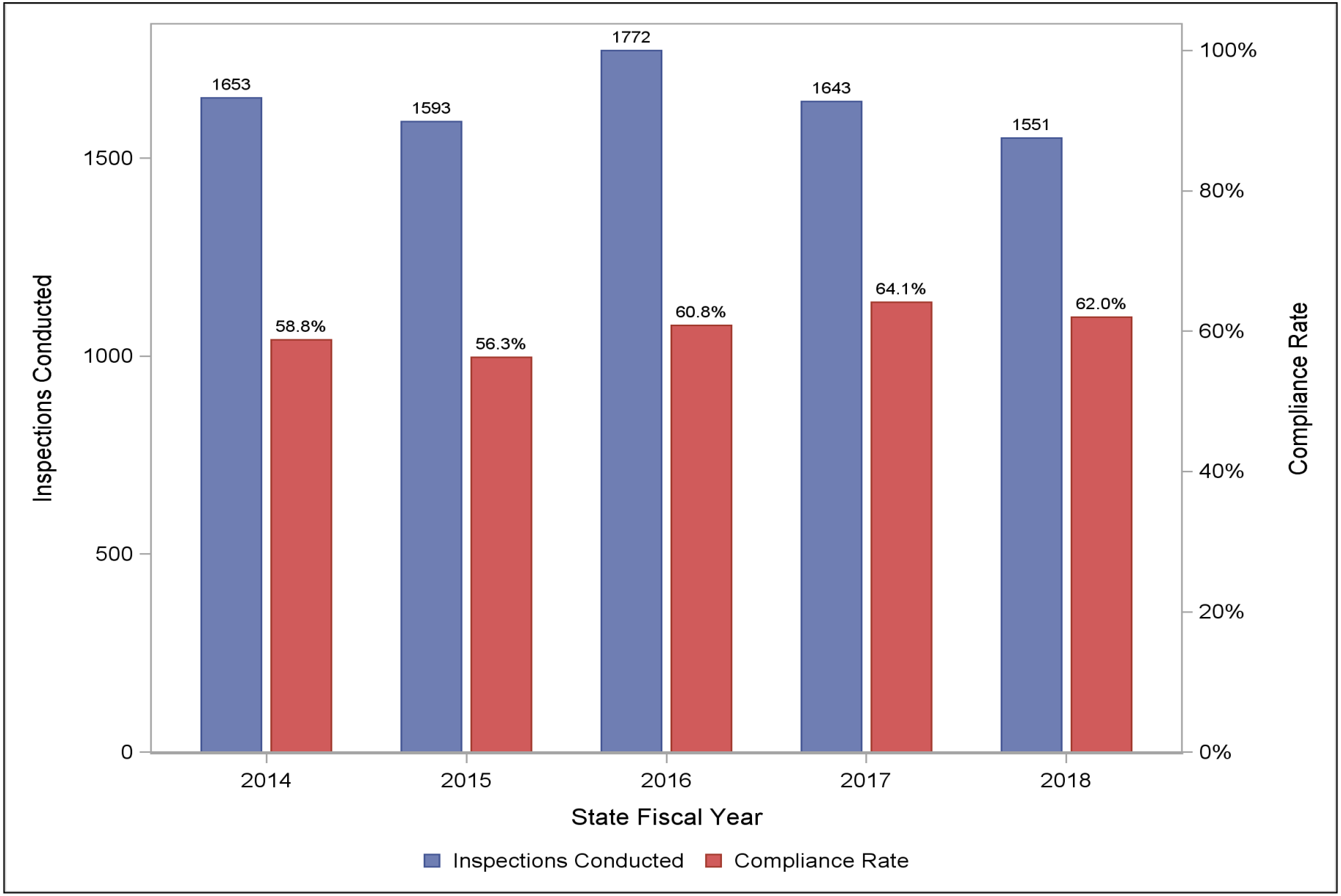
Wastewater: Regionalization Success

- Louisville Metropolitan Sewer District (MSD) is the largest wastewater utility in the Commonwealth and has regionalized the most facilities. Since 1996, more than 145 small WWTPs have been taken off-line.
- While hundreds of small WWTPs across the Commonwealth have been regionalized, hundreds of wastewater systems are still in operation today. **Approximately 180 have been identified as priority candidates for regionalization – challenging situations**.
- Passage of **House Bill 513 in the 2018 General Assembly** will allow better regulatory oversight of small private WWTPS and will allow Sanitation Districts, Water Districts, JSAs, etc. to own and operate systems outside jurisdiction with voluntary agreement.

Wastewater: Sanitary WWTPs



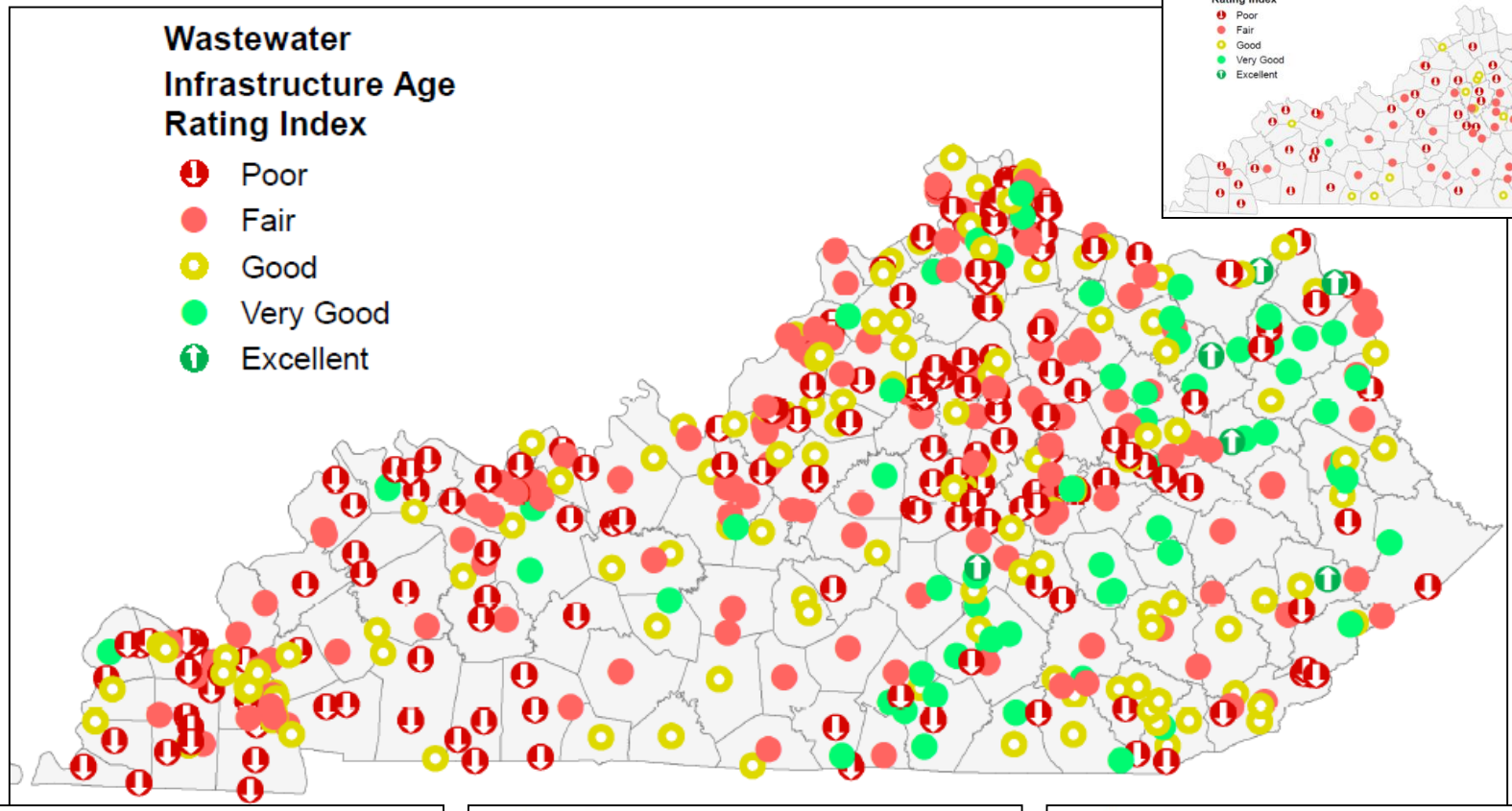
Wastewater: Compliance History

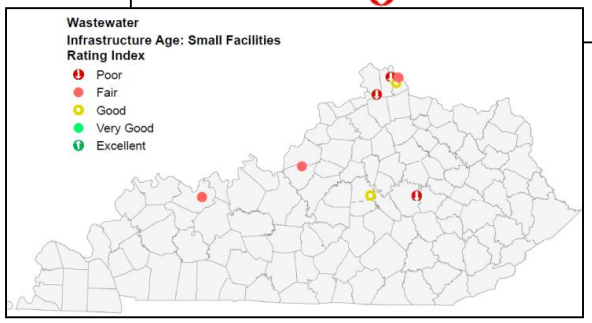


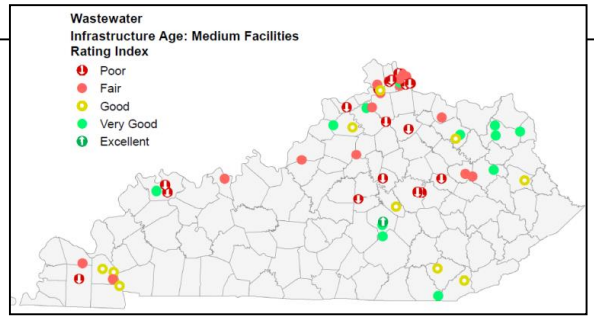
Wastewater: Needs & Challenges

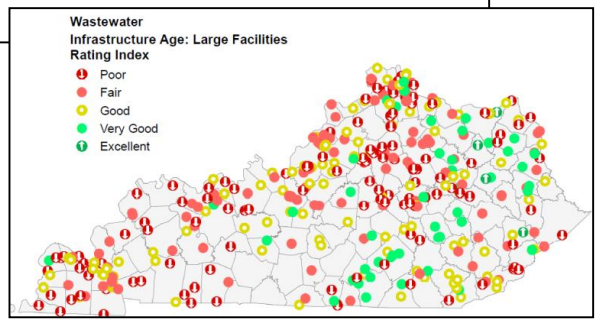
- Despite and because of Kentucky's successful record of regionalization and proactively seeking regional solutions, there **remain challenges.**
- We must invest in the assets we have built and maintain those assets or **risk stranding previous asset investments** and the communities they serve will be at real risk.
- The challenges we face are largely about three major issues:
  - **Age** of Infrastructure.
  - **Deferred** Maintenance and **Investment** in that Infrastructure.
  - **Insufficient** Proactive **Planning** for the Future.

Wastewater: Rating Index Infrastructure Age

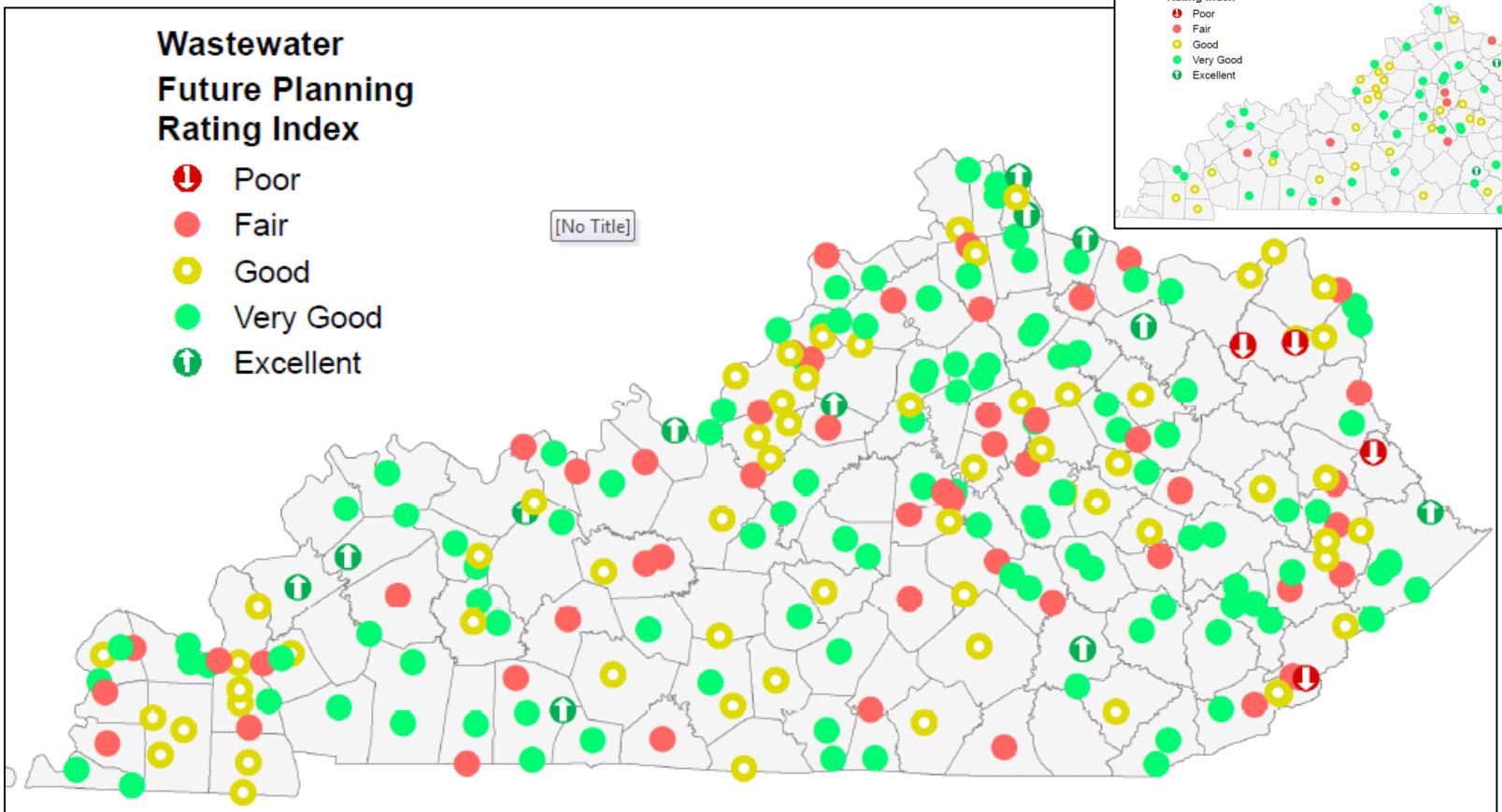


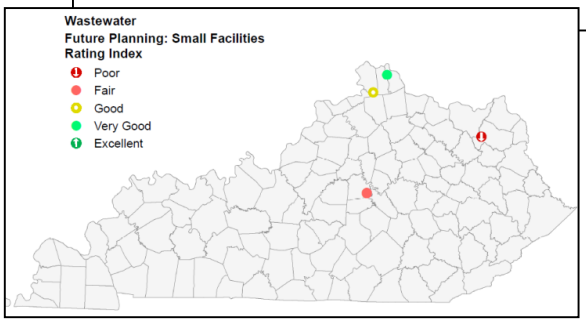


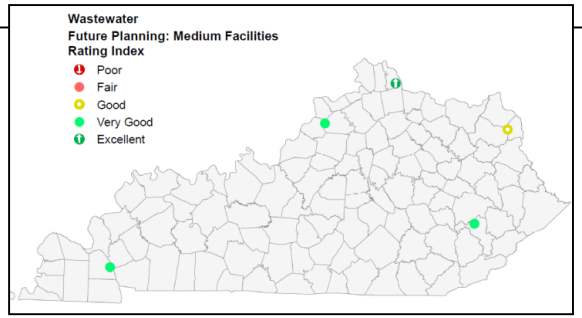


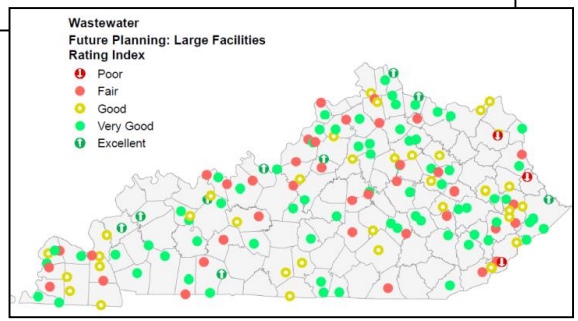


Wastewater: Rating Index Future Planning









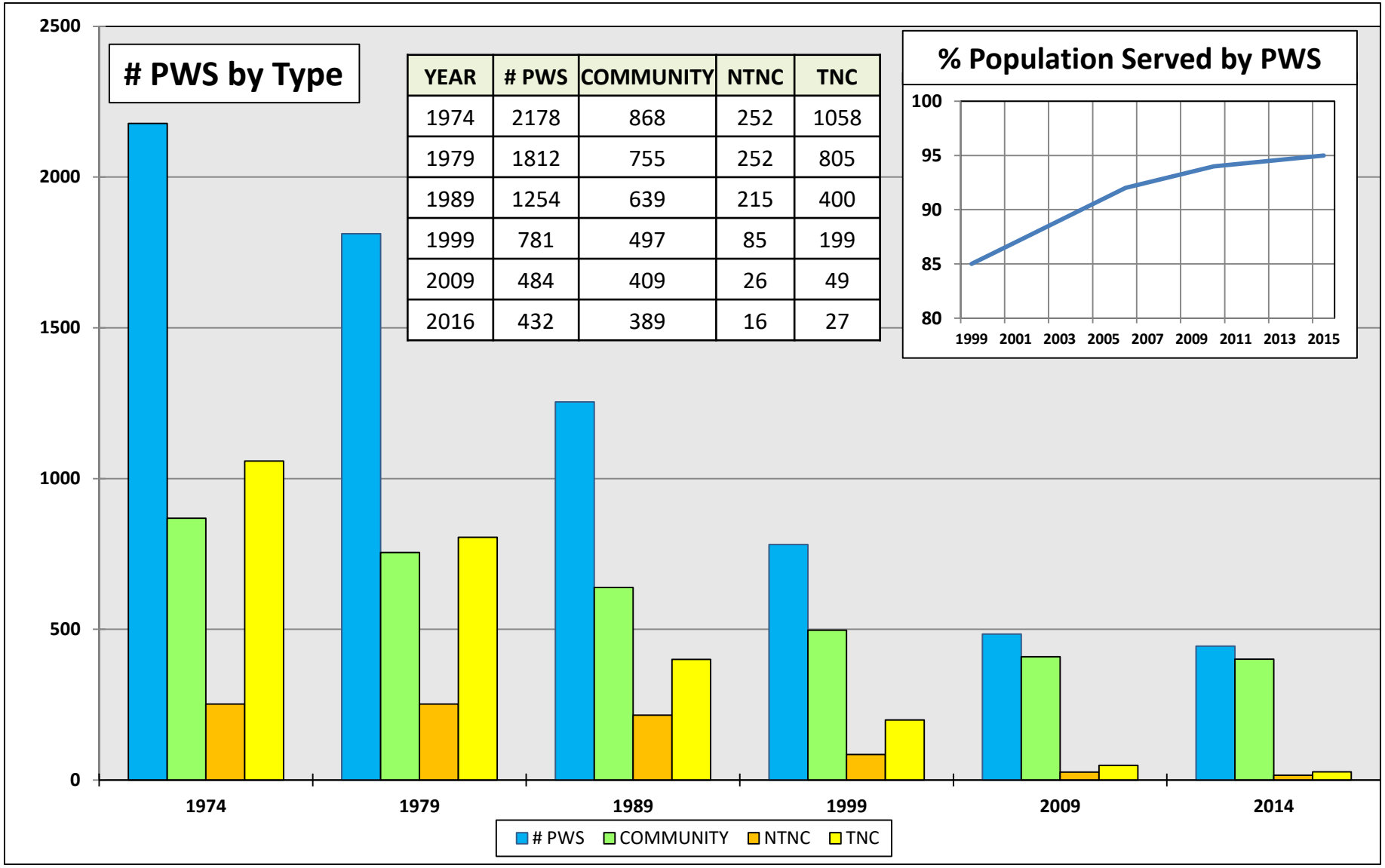
Wastewater: Infrastructure Overview

- **Wastewater**:
  - Approximately 800 wastewater treatment plants:
    - (average age > 36 years)
  - Approximately 18,000 miles of sewer line:
    - (average age ~42 years)
  - Greater than 4000 sewage lift stations.

Wastewater: Infrastructure Funding Needs

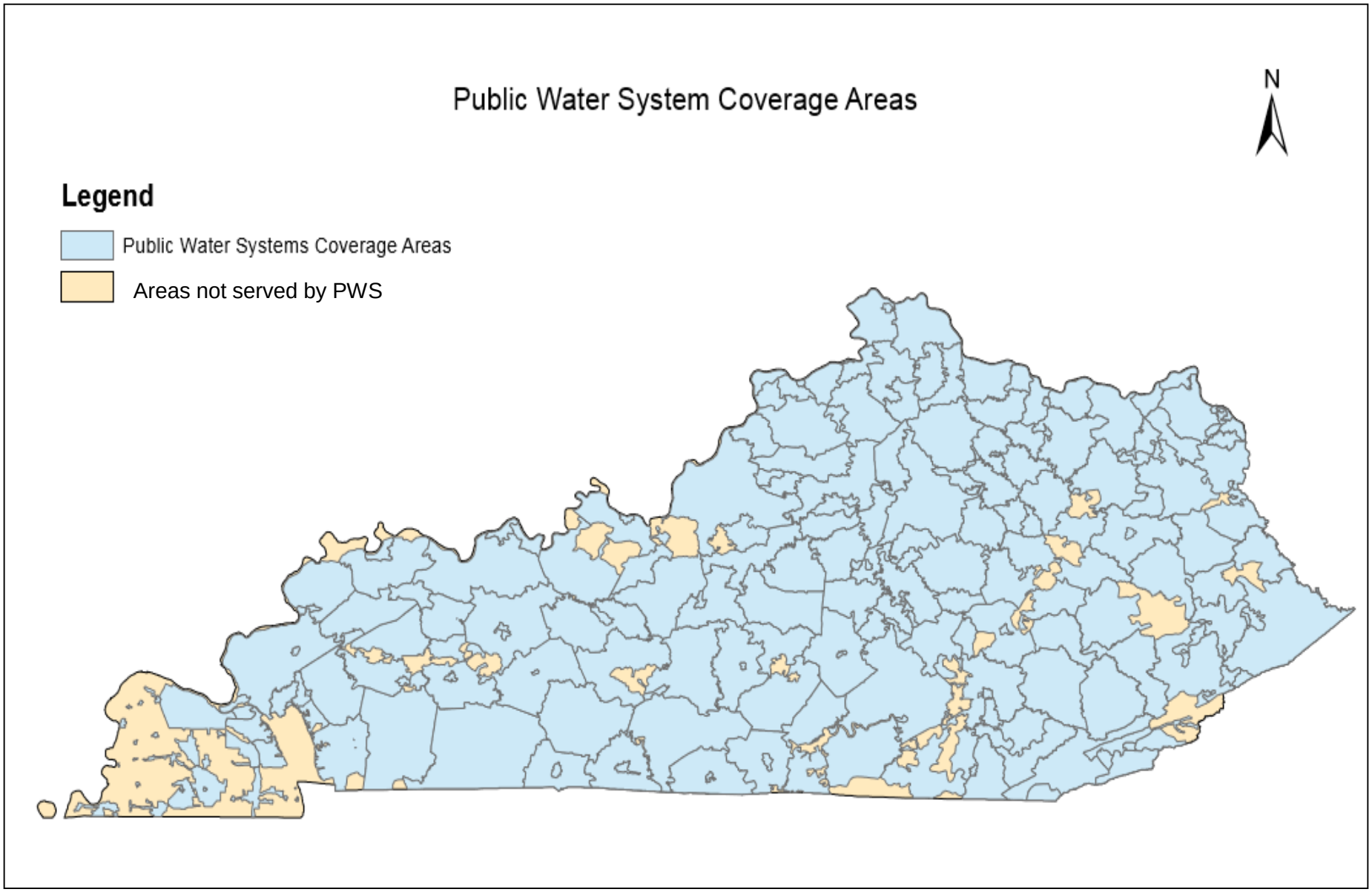
- **Wastewater**:
  - $6.232B in investment needs through 2035 (EPA 2014 Clean Watersheds Needs Survey):
    - Collection Systems including I/I, Replacement & Rehab and New Sewers = $3.92 Billion.
    - Treatment, Both Secondary and Advanced = $1.30B.
    - CSO Abatement, including Green Infrastructure = $945 Million.
    - Stormwater Infrastructure = $67 Million.
    - **Total = $6.232 Billion.**
  - Kentucky Grade = D+
    - (2017 ASCE Infrastructure Report Card).

Drinking Water: # PWS & % Population Served



YEAR	# PWS	COMMUNITY	NTNC	TNC
1974	2178	868	252	1058
1979	1812	755	252	805
1989	1254	639	215	400
1999	781	497	85	199
2009	484	409	26	49
2016	432	389	16	27

Drinking Water: Public Water Supply Coverage Areas



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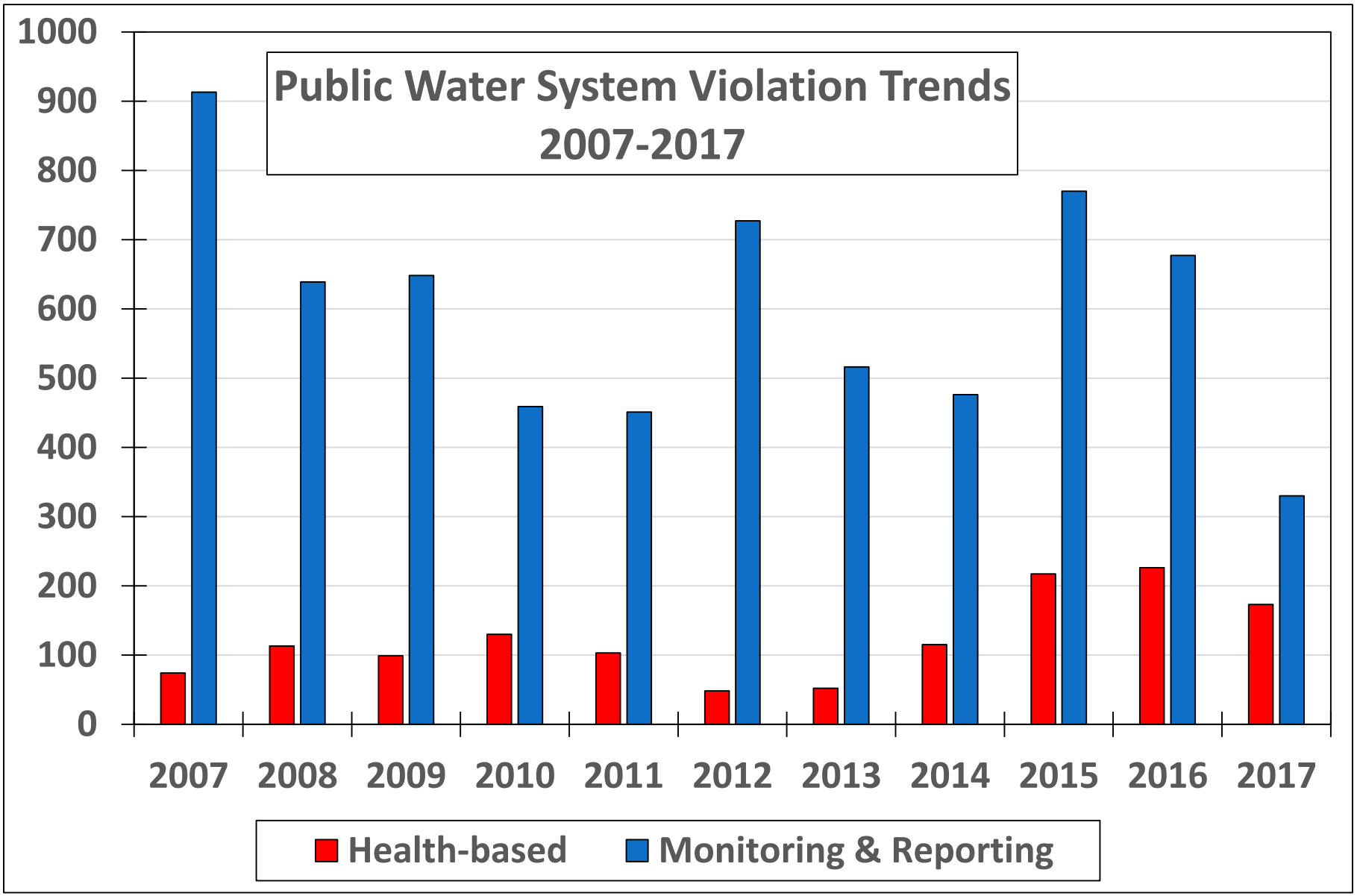

Drinking Water: Needs & Challenges

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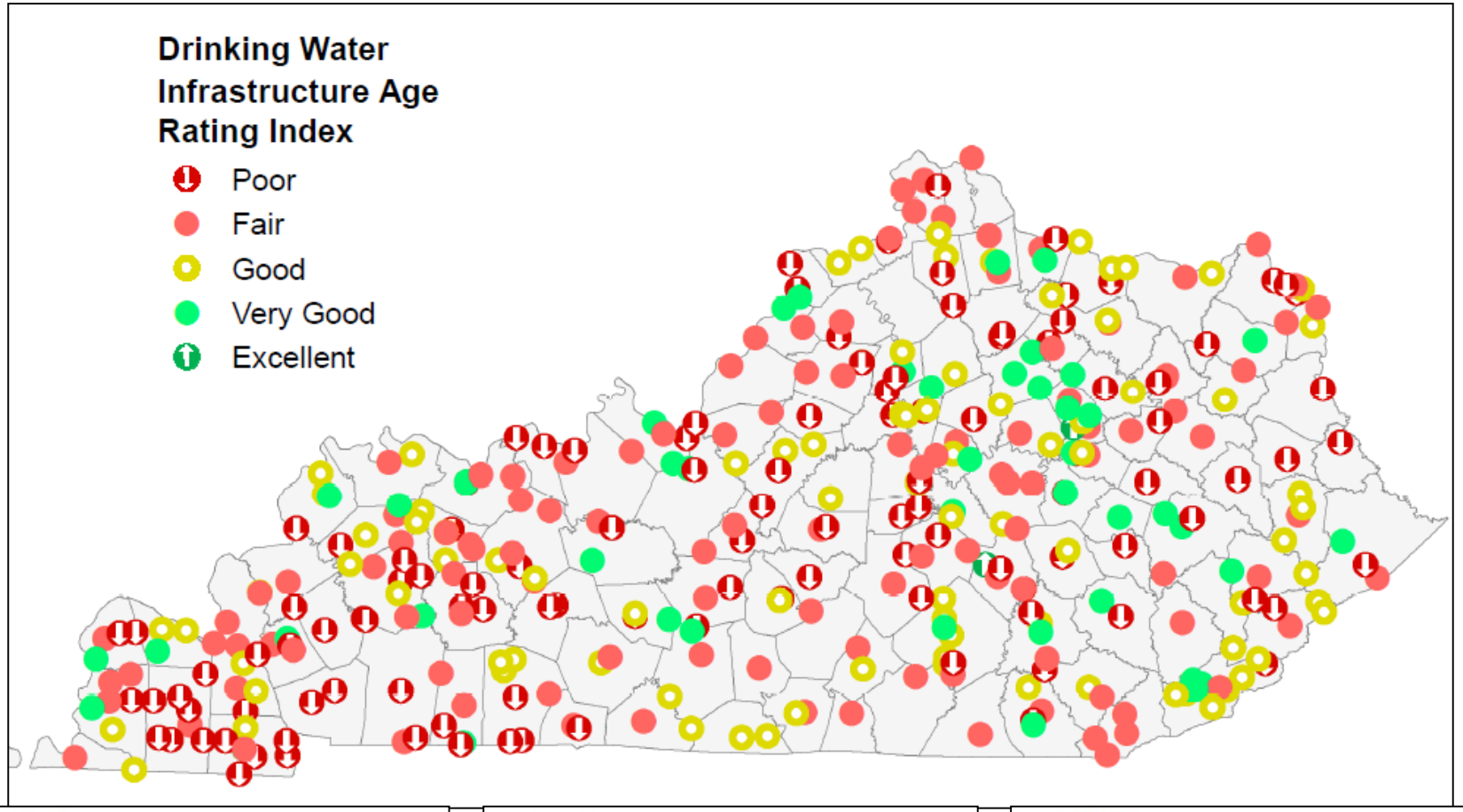
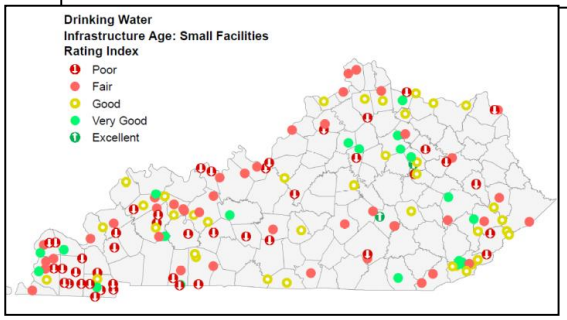
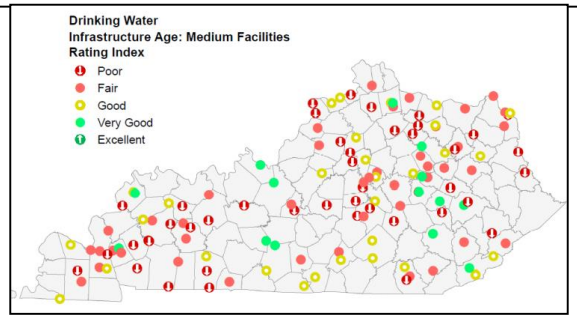
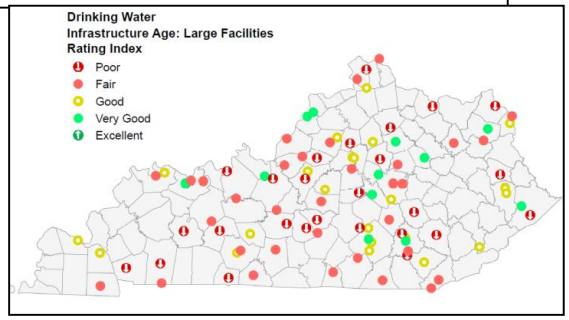
Drinking Water: Rating Index Infrastructure Age

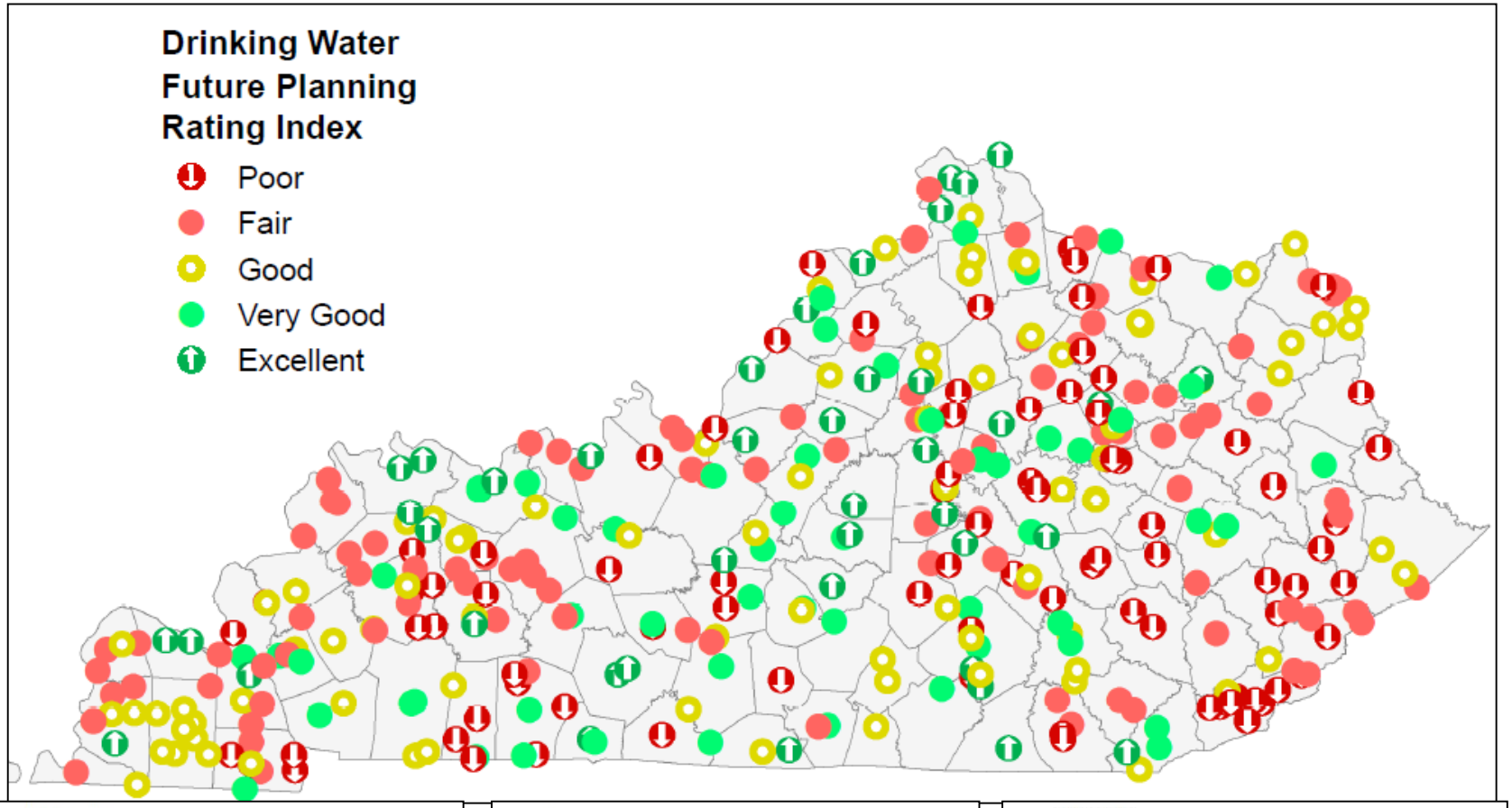


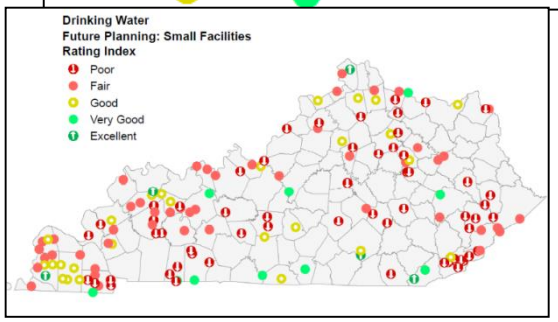


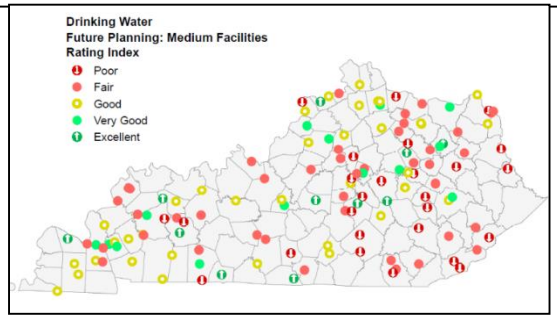


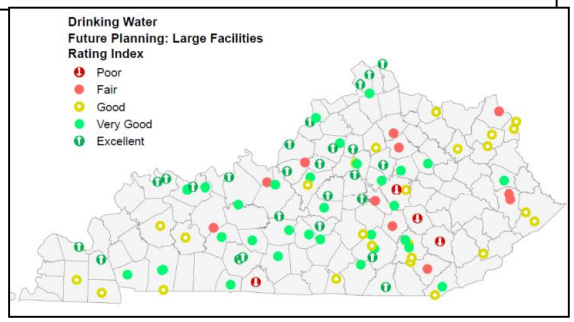


Drinking Water: Rating Index Future Planning









Drinking Water: Infrastructure Overview

- **Drinking Water**:
  - 213 water treatment plants:
    - (average age > 38 years)
  - Approximately 64,000 miles of distribution lines:
    - (average age ~40 years; 16% are > 50 years)
    - Challenges with terrain, depths, stream crossings, etc.
  - Approximately 1800 water storage tanks:
    - (average age ~28 years)
  - Greater than 1000 pumping stations:
    - Many old, no redundancy, no redundant power.

Drinking Water: Funding Needs

- **Drinking Water**:
  - $8.2B in need through 2035 (EPA's 2015 needs survey):
    - Transmission and Distribution = $6,320.7 million.
    - Treatment = $929.6 Million.
    - Storage = $648.8 Million.
    - Source = $206.7 Million.
    - Other = $126.2 Million.
    - **Total = $8.232 Billion.**
  - Kentucky Grade = D
    - (2017 ASCE Infrastructure Report Card)

Dams: Benefits and Risks

- Dams and **Benefits**:
  - Serve as **Flood Protection** downstream.
  - Provide reservoirs for **Water Supplies** for drinking water.
  - Provide opportunities for **Recreation.**

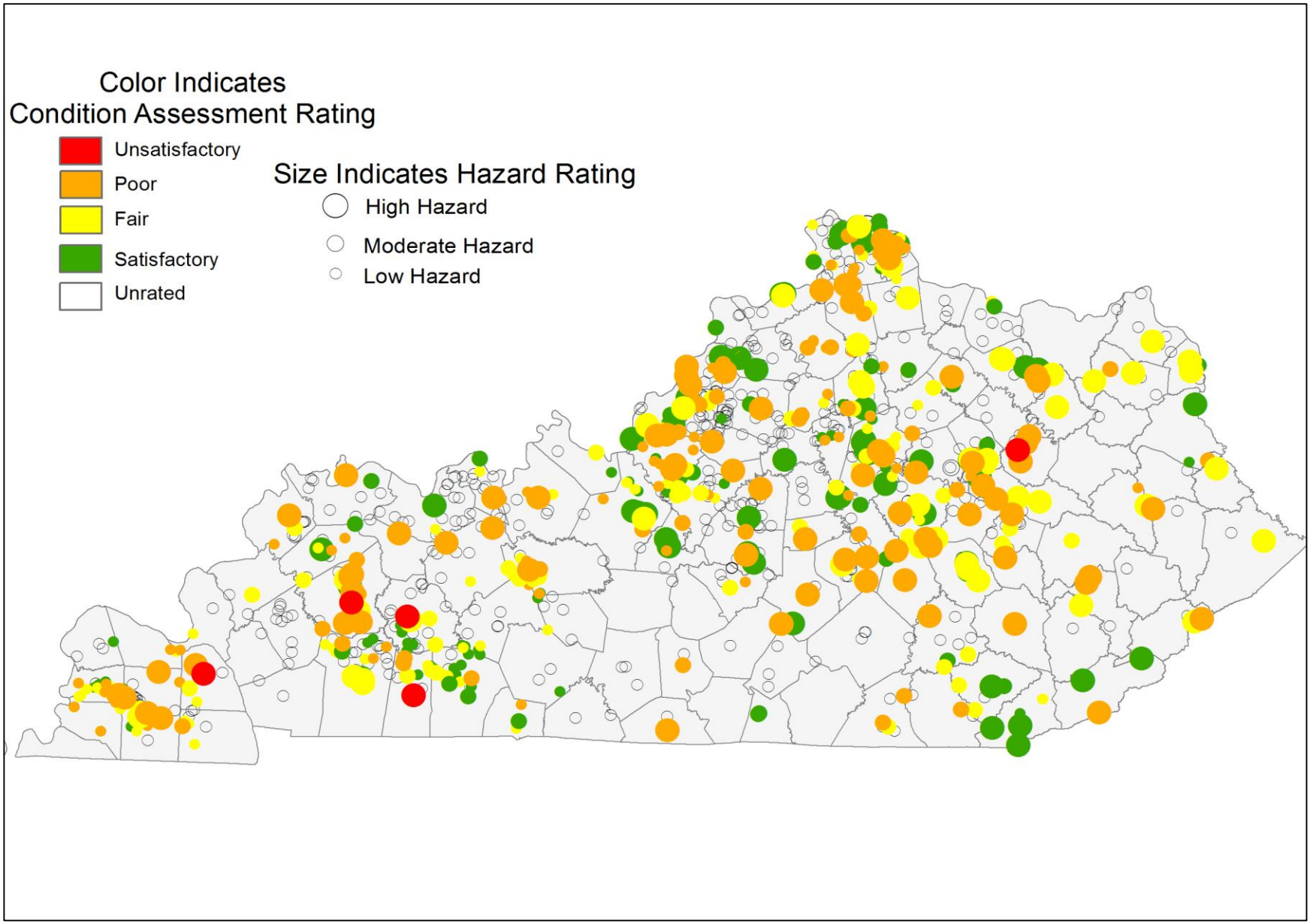
- Dams and **Risks**:
  - Downstream risk in **inundation zone** if failure occurs (High and Moderate).
  - Risk Creep: Low or Moderate Hazard Dams become High Hazard Dams when **development** occurs in the downstream inundation zone.

Dams: Kentucky Water Infrastructure

- **954 dams:**
  - 177 high-hazard
  - 131 moderate-hazard
  - 646 low-hazard dams

- 72 state-owned
- 14 federal government
- 315 local government-owned
- 553 privately owned

Dams: Condition Assessments



Dams: Condition Assessments

- **High Hazard Dams (177)**
  - Satisfactory 29%
  - Fair 27%
  - Poor 41%
  - Unsatisfactory 3%
- **Moderate Hazard Dams (131)**
  - Satisfactory 28%
  - Fair 40%
  - Poor 31%
  - Unsatisfactory 0%
  - Not Rated 1%
- **Low Hazard Dams**
  - No Condition Assessment

- **State-Owned (72)**
  - Satisfactory 14%
  - Fair 24%
  - Poor 31%
  - Unsatisfactory 0%
- **Local Gov't Owned (315)**
  - Satisfactory 23%
  - Fair 28%
  - Poor 18%
  - Unsatisfactory 2%
- **Private (553)**
  - Satisfactory 10%
  - Fair 13%
  - Poor 18%
  - Unsatisfactory 1%
  - Unrated 58%

Dams: Funding Needs

- **Dams:**
  - Estimated **$100M** in need in near term (2014 Dam Safety Mitigation Plan).
  - Dam failure estimated losses: 72 Kentucky publicly-owned dams:
    - Greater than $500 million - homes, businesses, infrastructure (Hazus)
    - Greater than $28 million - agriculture (Hazus)
  - Kentucky Grade = D
    - (2017 ASCE Infrastructure Report Card)

Overview Of Investment Needs

- **Wastewater: $6.232 Billion over next 20 years.**
- **Drinking Water: $8.232 Billion over next 20 years.**
- **Dams: $100 Million needed in the near-term.**
- **Why must we invest?**
  - Without investment, Kentucky will increasingly experience failure of systems and experience detrimental environmental and quality of life impacts to communities and the Commonwealth in addition to losing economic growth opportunities.
- **Investment must occur**, the only question is **when**?
  - **Reactive** approach:
    - Unplanned, Emergency funding.
    - More expensive.
  - **Proactive** approach:
    - Planned investment and progressive asset management.
    - Sustainable and Resilient.
    - Lowest cost approach.

What Are The Existing Funding Options?

- **Federal:**
  - Kentucky Infrastructure Authority (KIA) State Revolving Fund (SRF)
    - Leveraged bonds
  - Rural Development Loans
  - Community Development Block Grants
  - Appalachian Regional Commission grants
  - Abandoned Mine Land grants

- **State:**
  - General Funds
  - Tobacco Settlement funds
  - Coal Severance funds
  - State owned dam repair (SODR) funds
- **Local:**
  - General Funds
  - Bond issuances
  - Water and Sewer rate revenue
- **Private:**
  - P3 investment
  - Privatization

KIA State Revolving Fund (SRF)

- Capitalization Grant

  2019 Funding Cycle:

  CW SRF - $20,428,000

  DW SRF - $18,303,000

  2018 Funding Cycle:

  CW SRF - $16,874,000

  DW SRF - $12,830,000

  2017 Funding Cycle:

  CW SRF - $17,005,000

  DW SRF - $12,941,000

- SRF Funds Available for Lending

  2019 Funding Cycle:
  CW SRF - $72,000,000
  DW SRF - $50,000,000

  2018 Funding Cycle:
  CW SRF - $50,000,000
  DW SRF - $22,500,000

  2017 Funding Cycle:
  CW SRF - $135,000,000
  DW SRF - $34,000,000

  2016 Funding Cycle:
  CW SRF - $85,000,000
  DW SRF - $31,500,000

  2015 Funding Cycle:
  CW SRF - $95,868,200
  DW SRF - $32,550,112

Are There Funding Gaps?

- **Are we meeting the funding needs for all systems**, and, are all of our systems availing themselves to the currently available funding options?
  - **No**. While there are many viable funding options, all needs are not being met and not all systems are taking advantage of or able to take advantage of the currently available options.
  - **Why**? Often, smaller, more vulnerable systems (public and private) have:
    - Inadequate **fee rate structure** in place to be sustainable.
    - Insufficient **borrowing capacity** to obtain low or even zero interest loans to address their needs.
    - Inadequate **technical capacity** to sufficiently operate the system(s).
    - **Nobody wants** to inherit or assume the responsibility and challenges of a substandard or poorly operating system.

What Is Needed?

- Create a new Kentucky specific **Water Infrastructure Fund.**
- Funds dedicated to:
  - **Targeted investment** in Kentucky's critical water infrastructure where existing funding options are limited **in challenged communities**:
    - Water and wastewater treatment, collection, and distribution.
    - Drinking water sources and flood control dams.
    - Flood protection dams and levee.
  - Develop **Community Partnerships**:
    - Making financing infrastructure more affordable for communities.
    - Complementing and leveraging existing sources of funding.
      - SRFs, FEMA HMGP, HUD CDBG, Rural Development, DHS, EPA §319(h), AML, ARC
    - Public / Private Partnerships:
      - P3 water projects
      - Privatization

Benefits

- **Kentucky wins by investing in its infrastructure:**
  - Economic **sustainability** and **resilience** of water and wastewater systems, and dam structures.
  - Provide a catalyst for **economic development**:
    - Balance the sustainability of the state and small communities in Kentucky with economic development opportunities.
  - **Protecting Kentucky**:
    - Public Health.
    - Environmental and Economic Sustainability.
    - Economic Development / Growth.
    - Quality of Life.
  - Create **permanent jobs** every year in Kentucky.*

*** For every $1 million invested in water infrastructure, 15 jobs are created (Economic Benefits of Investing in Water Infrastructure, EPA).**

How Do We Meet These Funding Needs?

- **One Potential Option**:
  - Kentucky uses an estimated **136 billion gallons** of potable water **each year –** an estimated 75% used by households.
  - The average per capita usage is typically less than **75 gallons per day** (gpd).
  - With a population of nearly **4.5 million people**, greater than **95% of Kentucky households and businesses are served** by a Public Water System (PWS) – consequently the vast majority of entities in Kentucky are currently paying something for their water usage via an existing billing system.
  - As one example, a **$1 annual usage fee** per person or entity (based on the average annual water usage rate of a person) generates approximately **$5M dollars per year**.
  - There are **numerous** usage fee rate structure **options** that could be established.

How Do We Move Forward?

- The Cabinet believes it would be **beneficial to establish a workgroup** to address the issues:
  - Follow model used in similar previous efforts (e.g. HJR 56) to study this issue.
  - Develop possible options.
  - Report to the General Assembly with recommendations.
  - The Cabinet could proceed with convening a workgroup, and/or, the General Assembly could pass a resolution on the matter.
  - **Remember** – **it isn't if** we have to make these investments, rather **it is when** we make them. We are either going to be reactive or proactive.