Albany Pool Combined Sewer System
Long Term Control Plan

Presentation of Recommended CSO LTCP
Public Meeting
June 1, 2011

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Albany Cohoes Green Island Rensselaer Troy Watervliet

Public Meeting Schedule

- Round 1 - Project Introduction and Overview
  March 31, 2008
- Round 2 - CSS Characterization Findings Overview
  November 10, 2009
- Round 3 - Receiving Waters Sampling and Modeling
  January 13, 2011
- ***Round 4 - LTCP CSO Controls Presentation***
  June 1, 2011

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Details of previous work performed are summarized @ www.cdrpc.org

Public Meeting Agenda

- Recommended CSO LTCP Program Elements
- Proposed Implementation Schedule
- Financial Impact and Affordability Assessment
- Questions and Answers

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CSO LTCP Goals

- Maintain current Class C river uses
  - Fishing and fish habitat
  - Recreational boating
  - Other primary and secondary contact activities
- Accommodate swimming and bathing at future beach sites during May 1 to October 30 recreational season
- Support riverfront economic development

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Green Infrastructure Goals

- Reduce inflow to the combined sewer systems
  - Reduce flows to the WWTP's
  - Reduce treatment cost (saving energy)
  - Maximize CSO percent capture
- Specify and install energy efficient equipment
- Promote and expand Green Infrastructure Practices within Municipal Capital Improvement Programs
- Promote and enforce the new 2011 NYSDEC Stormwater Regulations for both public and private development projects

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Green Infrastructure Goals (cont.)

- Improve coordination between Albany Pool CSO communities and (additional) MS4 communities, within both Albany and Rensselaer Counties, where opportunities to share services/work products exist
  - Stormwater Coalition of Albany County is presently performing Municipal Code Review in regards to the new NYSDEC stormwater regulations
  - Albany Pool CSO communities are proposing to develop Green Infrastructure Technical Design Guidance for Public and Private Projects

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Albany Pool Baseline CSO Statistics

- All statistics are annual averages over the five year model simulation period
  - CSO Volume = 1236 Mgal
  - Wet weather flow treated at the WWTPs = 2827 Mgal
  - Pool-wide percent capture = 69.5%
  - Pool-wide treatment and floatables capture = 70.1%
  - Flow presently not disinfected at the WWTPs

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Bacteria Modeling Results

Scenario	WWTP Disinfection	Headwaters	Tributaries	CSO	Exceedances (months/30 months)
Baseline	No	Baseline	Baseline	Baseline	30
1	Yes	Baseline	Baseline	Baseline	2
2	Yes	Improved	Improved	Baseline	0
2A	Yes	Improved	Baseline; Patroon Creek improved to 2009 levels	Baseline	0
3	Yes	Baseline	Baseline	85% Capture	2
4	No	Baseline	Baseline	85% Capture	30

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Baseline refers to 2008 calibrated conditions

RWQ Modeling Conclusions

- CSOs do not preclude the Hudson River attaining water quality standards
- Bacteria standard is expected to be met upon implementation of WWTP seasonal disinfection and improvements to headwaters of the Hudson River and Patroon Creek
- Improvements to Hudson River continuous bacteria loads provide more effective bacteria-based water quality improvements than improvements to intermittent, wet weather-based CSO discharges

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CSO Control Strategy

- Use Demonstrative Approach for CSO Control
- Achieve regulatory compliance as measured by the water quality standard for bacteria
- Optimize performance of existing infrastructure
- Incorporate WWTP and system rehabilitation projects to address current needs and reduce risk of emergency repairs
- Minimize additional infrastructure that will require additional O&M

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Recommended CSO Control Strategies

- D — WWTP Disinfection
- WWTP — WWTP Process Improvements
- BMP / OPT — BMPs/System Optimization
- S/S — Sewer Separation or Storage
- FCF — Floatables Control Facilities
- T — Tributaries Enhancement

Additional Pool-Wide Projects

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Projects Completed to Date

- Disinfection Projects – No projects
- WWTP Process Improvement Projects - $10.28 million
- BMPs & System Optimization Projects - $1.64 million
- Sewer Separation and Storage Projects - $20.96 million
- Floatables Control Facilities – $1.0 million
- Tributary Enhancements – Patroon Creek Improvements
- Additional Pool-Wide Projects – No projects
- Total Spent to Date by the Albany Pool Communities - $33.88 million

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Green Infrastructure Demonstration Projects

- Member Communities of the Stormwater Coalition of Albany County participate in a Rain Barrel Program to educate the public and promote the reuse and conservation of stormwater
- Rain Garden and Tree Planter Demonstration Projects have been completed to educate the public and promote infiltration practices
- Porous Pavement Demonstration Project was completed in the City of Cohoes
- Green Street Demonstration Projects are proposed within the City of Albany and the City of Rensselaer

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Recommended CSO LTCP Elements

- Disinfection Projects
  - ACSD North - $5.7 million
  - ACSD South - $3.1 million
  - RCSD - $7.2 million
- WWTP Process Improvement Projects
  - RCSD Screens, Grit Removal Enhancements, Final Settling Tanks - $15.8 million

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Recommended CSO LTCP Elements (cont.)

- BMPs & System Optimization Projects
  - Albany – PS & Sewer Rehabilitation - $2.75 million
  - Cohoes PS & Regulator Upgrades - $0.30 million
  - Green Island CSS Improvements - $0.02 million
  - Rensselaer Sewer Cleaning/Inspection - $0.05 million
  - RCSD PS & Regulator Upgrades - $10.38 million
  - RCSD/Troy Outside Community Metering - $2.07 million
  - Troy Monitoring and System Mapping - $0.06 million
  - Watervliet CSS Improvements - $0.05 million

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Recommended CSO LTCP Elements (cont.)

- Partial Sewer Separation and Storm Water Storage Projects
  - Albany - $2.88 million
    - Sewer separation: Lawnridge/Grove/Glendale/Forrest Ave (016)
    - Storm Water Storage: Multiple locations for storm water storage structures and groundwater recharge basins (016)
  - Cohoes - $7.71 million
    - Columbia St. (008/015), George St. (008/015), Middle Vliet (007)
  - Rensselaer - $ 7.59 million
    - Partition St. and Broadway (006), Washington Ave. and Farley Dr (012)
  - Troy - $13.93 million
    - 123rd St (002), 113th St (013/013A), Hoosick St. (024), Van Buren St (041), Polk St (044)

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Recommended CSO LTCP Elements (cont.)

- Floatables Control Facilities
  - Albany – $22.52 million
    - 4a, Big C, 4, Arch, Ferry, Madison (016 and 019)
    - Maiden, Steuben, Orange (026)
    - Quackenbush, Jackson, Liberty (030)
  - Cohoes - $2.87 million
    - Little C (008/015)
  - Green Island - $0.36 million
    - Hamilton St (003)
  - Troy/Rensselaer – maintain existing source controls

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Recommended CSO LTCP Elements (cont.)

- Tributary Enhancements

Tributary and Sewer Inspections

- Rensselaer/E. Greenbush (Mill Creek) - $0.03 million
- Troy (Wynants at Cross Street) - $0.05 million
- Troy/Brunswick (Poesten Kill) - $0.04 million
- Troy/N. Greenbush (Wynants Kill) - $0.03 million

Sewer Rehabilitation Projects

- Albany/ACSD (Patroon Creek) - $0.68 million
- Troy (Wynants at Cross Street) - $1.92 million budget

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Recommended CSO LTCP Elements (cont.)

- Additional Pool-Wide Projects
  - Hudson River WQ Public Advisory Webpage - $0.50 million budget
  - Sewer System Operations, Maintenance and Inspection Plans - $0.30 million budget
  - Asset Management Plans - $0.60 million budget
  - Post-Construction Monitoring Program – Budget to be Determined
  - Green Infrastructure Technical Design Guidance – $0.10 million budget

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Cost Summary of Recommended CSO LTCP Elements

- Disinfection Projects - $16.0 million
- WWTP Process Improvement Projects - $15.8 million
- BMPs & System Optimization Projects - $16.0 million
- Sewer Separation and Storage Projects - $32.1 million
- Floatables Control Facilities - $25.7 million
- Tributary Enhancements - $2.8 million
- Additional Pool-Wide Projects - $1.5 million
- Total Cost of Albany Pool LTCP - $110 million

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Costs of Other NY CSO LTCP Programs

	Buffalo Sewer Authority	Onondaga County	Albany Pool Communities
Population (thousands)	Approx. 300	139	167
Service Area (sq. mi.)	110	100	80
CSO Area (sq. mi.)	43	11	22
Number of CSOs	59	63	92
Overflow Volume (Bgal/yr)	3.0	1.0	1.3
Compliance Costs (millions)	$168 recommended $524 preferred	$640	$110

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Benefits of Recommended CSO LTCP

- Compliance with WQ Standards for fecal coliform
- Recurring DWOs to be addressed
- SPDES Permit compliance
- Improved conveyance of wet weather flow to WWTPs
- Maximizes WWTP wet weather capacity
- Seasonal disinfection of WWTP effluent
- Improvements to water quality of tributaries
- Reduced CSO discharge volume by 311 Mgal
- Provides floatables control for 454 Mgal

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Statistics Upon Implementation of CSO LTCP

	Baseline	Post Construction of Recommended Projects
CSO Volume (Mgal)	1236	925
Number of Events	65	65
Wet Weather Flow Treated at WWTPs (Mgal)	2827	3031
Pool-Wide Percent Capture	69.5%	77.2%
CSO Flow Receiving Floatables Control (Mgal)	27	454
Pool-Wide Treatment & Floatables Capture	70.1%	88.8%
Disinfection at WWTPs	No	Seasonal
Fecal Coliform WQ Standard Violations	30	0

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Proposed Implementation Schedule

- Immediate Water Quality Benefits
- Maintains SPDES/Consent Order Dates
- Preserves Capital for Repair & Replacement
- Maintains Affordability

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Water Quality Based Goals

- Implement Disinfection Projects early for greatest benefit
- Perform Tributary Improvements for 24/7 benefit
- Implement Optimization projects to reduce overflows and maximize WWTP flows
- Construct Big C Floatables Control Facility (FCF) for greatest early impact
- Perform WWTP and Pump Station Improvements
- Implement Satellite FCFs

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Implementation Schedule Constraints

- Consent Order Compliance Dates
  - Cohoes Pump Station Upgrades
  - RCSD/Troy Dry Weather Overflows (Pending)
- SPDES compliance dates need to be met
  - RSCD Disinfection by September 2012
  - ACSD Disinfection by LTCP Approval plus 30 months
- Secured project financing (favorable low interest loans)
- Stage projects to minimize project interferences
- Year by year affordability based on projected rate increases

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Proposed 15 Year Implementation Schedule

Community	Project	Estimated Project Cost	Years After Approval of LTCP														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Albany	Bouck Tide Gate Installation	$0.12															
Albany	Marrion/Myrtle Area Storm Water Storage Structures	$0.34															
Albany	Pumping Station Upgrades	$0.37															
Albany	Sewer Rehabilitation Projects Throughout the City of Albany	$0.63															
ACSD	Patroon Creek Trunk Sewer Repairs	$0.68															
All Communities	Sewer System Operations, Maintenance and Inspection Plans	$0.30															
All Communities	Asset Management Plans	$0.60															
Cohoes	2011 Storm Sewer Improvements	$1.50															
Cohoes	Upgrade Pump Stations (new pumps and controls)	$0.06															
Cohoes	Pump Station Bypass Evaluation	$0.03															
Cohoes	Pump Station Bypass Design and Construction	$0.11															
Green Island	Swan St. Improvements	$0.01															
Rensselaer	Broadway Dry Weather Overflow Elimination Project	$1.79															
Rensselaer	Broadway Sewer and Drain Improvements (CSO 006)	$2.80															
Rensselaer	Partition Street Trunk Sewer Inspection and Cleaning (CSO	$0.05															
RCSD	Replacement of Mechanical Bar Screens	$1.18															
RCSD	Disinfection Facilities at WWTP	$7.22															
RCSD	Regulator Improvements to Address DWOs	$0.38															
Troy	Regulator Monitoring for DWOs	$0.04															
Troy	Catch Basin Survey and Mapping	$0.02															
Watervliet	Improvements at Five Regulators	$0.05															
All Communities	Green Infrastructure Technical Design Guidance	$0.10															
Cohoes	Improvements at Ten Regulators	$0.10															
Green Island	Hamilton St. Improvements	$0.01															
Albany	Remove Hudson Street Overflow	$0.01															
ACSD	North Plant Disinfection Project	$5.70															
ACSD	South Plant Disinfection Project	$3.10															
Rensselaer	Washington Avenue Sewer Improvements and Elimination of Farley Drive CSO (CSO 012)	$3.00															
Albany	Elberon Place Area Storm Water Storage	$0.30															
Albany	Lawnridge/Grove/Glendale/Forrest Ave. Separation (CSO	$0.37															
Albany	Marietta Place Area Storage Structures	$0.22															
RCSD/Troy	Outside Community Metering	$2.07															
Albany	Upper Washington Avenue Groundwater Recharge	$0.50															
Albany	Melrose/Winthrop Groundwater Recharge Basins	$0.65															
Rensselaer/East Greenbush	Investigate Non-CSO Bacteria Sources Along Mill Creek	$0.03															
Troy	Hoosick St. Storm Sewer Extension (CSO 024)	$1.05															
Albany	Floatables Control Facility for CSO 016 and CSO 019 Outfalls (Regulators Big C, 4 and 4a, Arch, Ferry and Madison)	$14.52															
Cohoes	George St. Sewer Separation (CSO 008/015)	$0.42															
Troy	Cross St. Trunk Sewer Evaluation (Wynants Kill) (CSO 045)	$0.05															
Troy	113th Street Stream Separation (CSO 013 and 013A)	$1.43															
Troy/Brunswick	Investigate Non-CSO Bacteria Sources Along Poesten Kill	$0.04															
Troy/North Greenbush	Investigate Non-CSO Bacteria Sources Along Wynants Kill	$0.03															
Albany	Modify Bouck Regulator	$0.25															
Albany	Mereline Combined Sewage Storage	$0.50															
Albany	Remove Schyler (CSO 015) Overflow	$0.27															
All Communities	Hudson River Water Quality Public Advisory Webpage	$0.50															
Cohoes	Middle Vliet St. Sewer Separation (CSO 007)	$0.50															
RCSD	Primary Sludge Degritting	$3.12															
RCSD	Enhanced Final Settling	$11.47															
RCSD	Upgrade Pump Stations	$10.00															
Cohoes	Columbia St. Phase II Separation (CSO 008/015)	$1.00															
Troy	Polk Street Stream Separation (CSO 044)	$2.17															
Cohoes	Vliet St and Manor Ave. Sewer Rehab, Replacement and Separation. Phase I (CSO 007)	$1.43															
Troy	Cross Street Trunk Sewer Repair Along Wynants Kill (CSO 045)	$1.92															
Cohoes	Little C Floatables Control Facility (CSO 008/015)	$2.87															
Green Island	Hamilton St. Floatables Control Facility (CSO 003)	$0.36															
Albany	Remove Liberty (CSO 022) Overflow	$1.10															
Troy	Van Buren Street Stream Separation (CSO 041)	$4.74															
Albany	Floatables Control Facility for CSO 026 Outfall (Regulators Malden, Stuben and Orange)	$4.00															
Cohoes	Vliet St and Manor Ave. Sewer Rehab, Replacement and Separation. Phase II (CSO 007)	$1.43															
Troy	123rd Street Stream Separation (CSO 002)	$4.54															
Albany	Floatables Control Facility for CSO 030 Outfall (Regulators Quackenbush, Jackson and Livingston)	$4.00															
Cohoes	Vliet St and Manor Ave. Sewer Rehab, Replacement and Separation. Phase III (CSO 007)	$1.43															

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Year-by-Year Cost/Rate Assumptions

- Capital projects implemented per the 15-year schedule
- Community rate analyses requires distribution of costs
  - Cost distribution among the communities has not been agreed upon
  - Therefore, costs were distributed based on allocation formula used for the development of the LTCP
- Considered limited non-CSO repair and replacement costs

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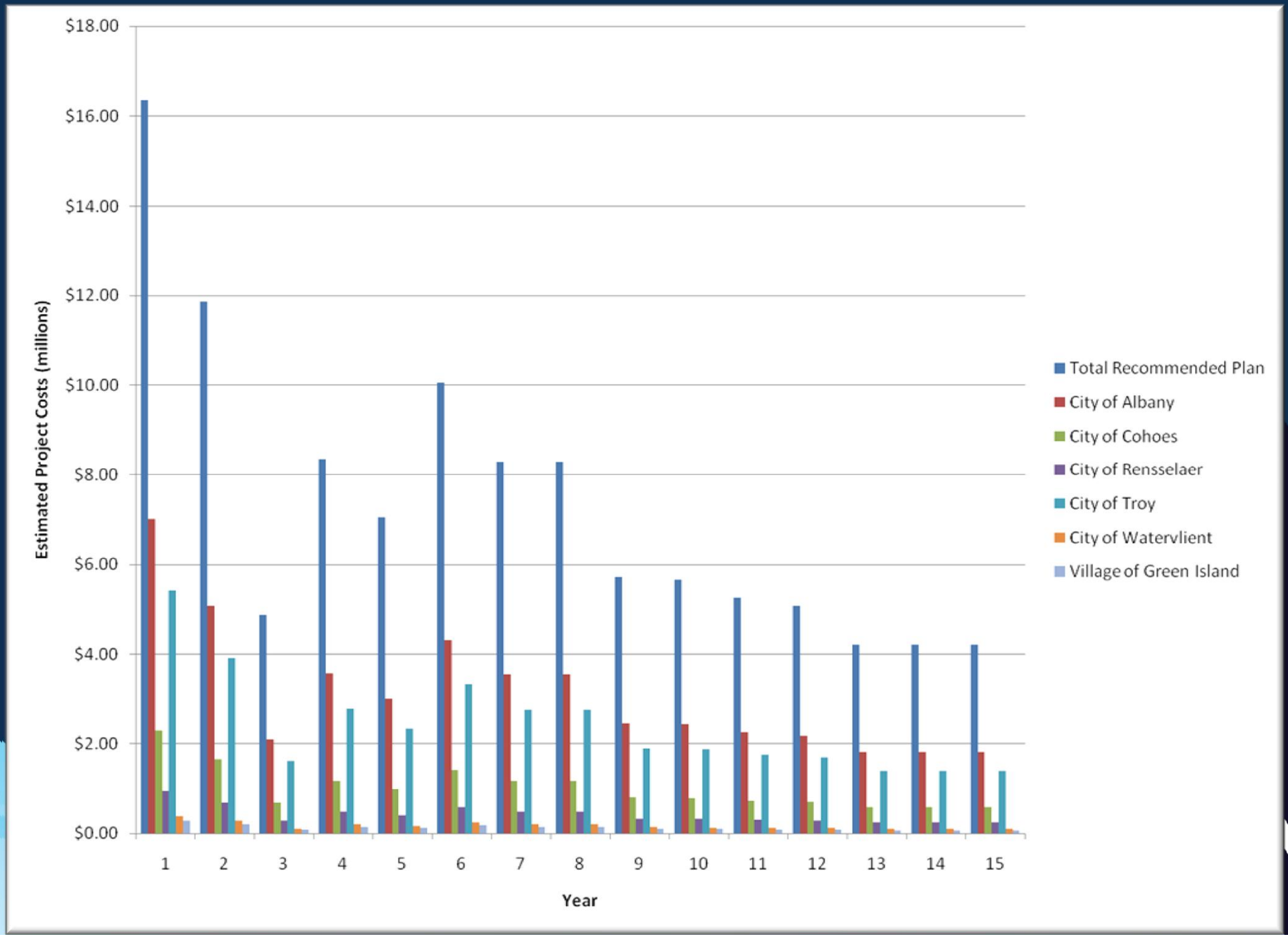
Year-by-Year Capital Expenditures



EPA Financial Capability Assessment Results

- Phase I – Residential Indicator in the “Mid-Range”
- Phase II – Average Community Financial Indicator in the “Mid-Range”
- Combined Financial Capability Matrix Score – “Medium Burden”

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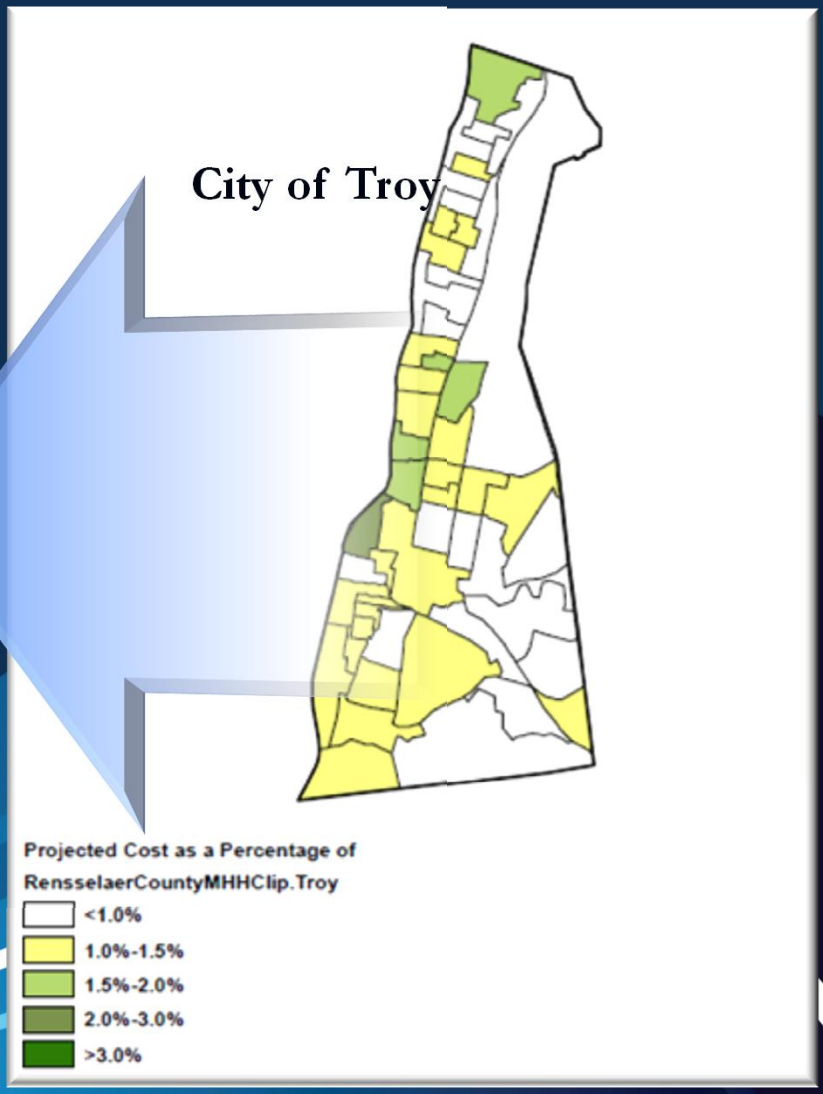
Significant Annual Rate Impacts Needed to Pay for the LTCP

Projected Annual Rate Increase

	Year	Albany	Cohoes	Watervliet	Green Island	Rensselaer	Troy
0	2012	2%	9%	0%	5%	9%	6%
1	2013	6%	10%	0%	6%	14%	11%
2	2014	5%	14%	9%	6%	11%	8%
3	2015	4%	5%	4%	0%	7%	4%
4	2016	4%	5%	4%	5%	5%	4%
5	2017	2%	5%	4%	5%	6%	4%
6	2018	4%	10%	6%	6%	9%	7%
7	2019	9%	12%	7%	7%	12%	9%
8	2020	4%	9%	6%	6%	9%	7%
9	2021	5%	6%	5%	5%	6%	5%
10	2022	14%	6%	4%	5%	5%	5%
11	2023	0%	6%	4%	4%	5%	5%
12	2024	0%	6%	4%	5%	5%	4%
13	2025	0%	3%	3%	4%	3%	3%
14	2026	0%	3%	3%	3%	3%	3%
15	2027	0%	2%	3%	2%	3%	3%

More Significant Affordability Concerns For Low Income Areas

	Year	Est. Annual Residential Customer Cost	Avg Income (Low Income Area)	Residential Cost as a % of Income
1	2013	$350	$17,967	2.0%
2	2014	$379	$18,398	2.1%
3	2015	$396	$18,840	2.1%
4	2016	$412	$19,292	2.1%
5	2017	$430	$19,755	2.2%
6	2018	$461	$20,229	2.3%
7	2019	$503	$20,714	2.4%
8	2020	$537	$21,212	2.5%
9	2021	$564	$21,721	2.6%
10	2022	$590	$22,242	2.7%
11	2023	$616	$22,776	2.7%
12	2024	$643	$23,322	2.8%
13	2025	$662	$23,882	2.8%
14	2026	$680	$24,455	2.8%
15	2027	$698	$25,042	2.8%



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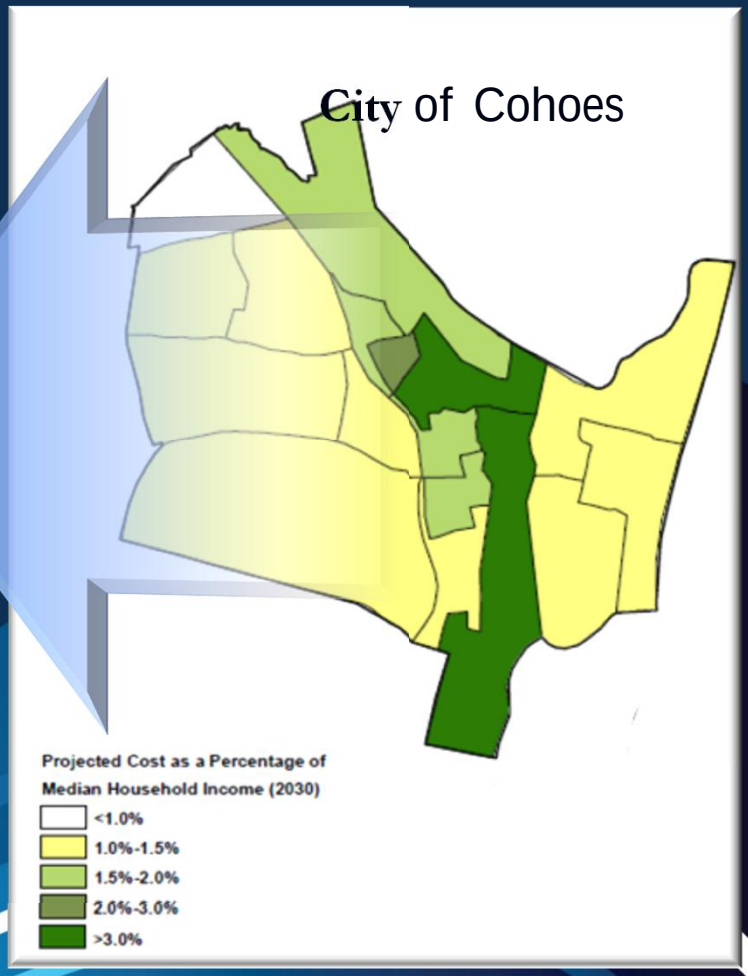
More Significant Affordability Concerns For Low Income Areas

	Year	Est. Annual Residential Customer Cost	Avg Income (Low Income Area)	Residential Cost as a % of Income
1	2013	$448	$22,260	2.0%
2	2014	$513	$22,772	2.3%
3	2015	$538	$23,296	2.3%
4	2016	$565	$23,831	2.4%
5	2017	$595	$24,379	2.4%
6	2018	$652	$24,940	2.6%
7	2019	$731	$25,514	2.9%
8	2020	$795	$26,101	3.0%
9	2021	$845	$26,701	3.2%
10	2022	$892	$27,315	3.3%
11	2023	$942	$27,943	3.4%
12	2024	$994	$28,586	3.5%
13	2025	$1,027	$29,244	3.5%
14	2026	$1,055	$29,916	3.5%
15	2027	$1,081	$30,604	3.5%



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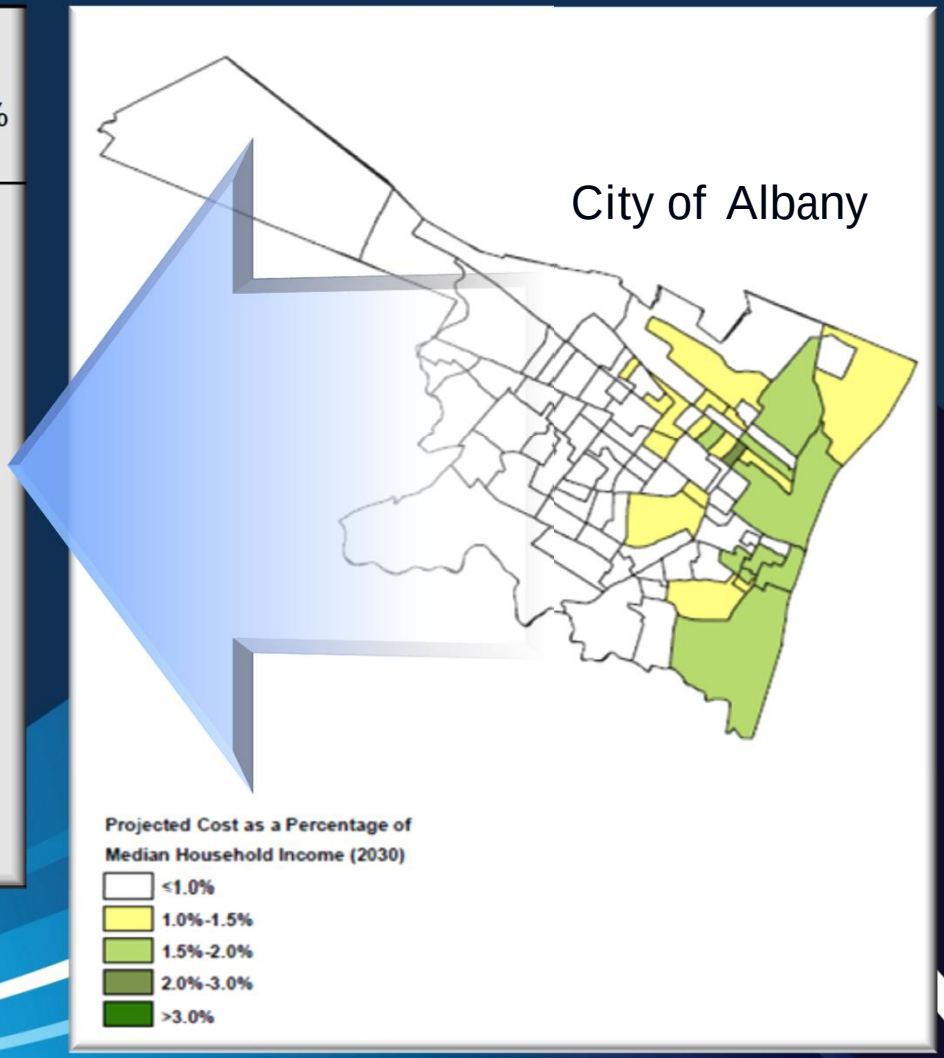
More Significant Affordability Concerns For Low Income Areas

	Year	Est. Annual Residential Customer Cost	Avg Income (Low Income Area)	Residential Cost as a % of Income
1	2013	$334	$13,697	2.4%
2	2014	$351	$14,039	2.5%
3	2015	$365	$14,390	2.5%
4	2016	$380	$14,750	2.6%
5	2017	$388	$15,119	2.6%
6	2018	$405	$15,497	2.6%
7	2019	$440	$15,884	2.8%
8	2020	$459	$16,281	2.8%
9	2021	$483	$16,688	2.9%
10	2022	$550	$17,106	3.2%
11	2023	$550	$17,533	3.1%
12	2024	$550	$17,972	3.1%
13	2025	$550	$18,421	3.0%
14	2026	$550	$18,881	2.9%
15	2027	$550	$19,353	2.8%



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Next Steps

- Compile and Address Public Comments and Concerns
- Submit Draft CSO LTCP
  - June 30, 2011 (Target)

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Albany Pool Combined Sewer System
Long Term Control Plan Development

Comments & Questions

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