

Bethlehem Water Supply & Treatment

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COMMISSIONER OF PUBLIC WORKS**

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Agenda

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- Water Supply Necessities
- Existing Water Supply and Treatment
- Supply Projections
- Planning & Key Decisions (2004 – 2010)
- Implementation

Water Supply Necessities

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- Public expectation is for high quality water for drinking, bathing, household activities and fire protection **ALWAYS!**



- Water supply is not business economics:
Water Supply must always exceed Demand

Sufficient water supply for drinking, cooking, bathing, watering lawns, etc. – domestic needs and public health

Water for fire protection (public safety) needs

Unaccounted for water: meter losses, fire protection, leaking pipes, system flushing

Develop, maintain and protect high quality water supply resources

Redundancy and storage to accommodate emergencies, equipment failures, power outages, and maintenance shut downs

Supply to support anticipated growth and economic development

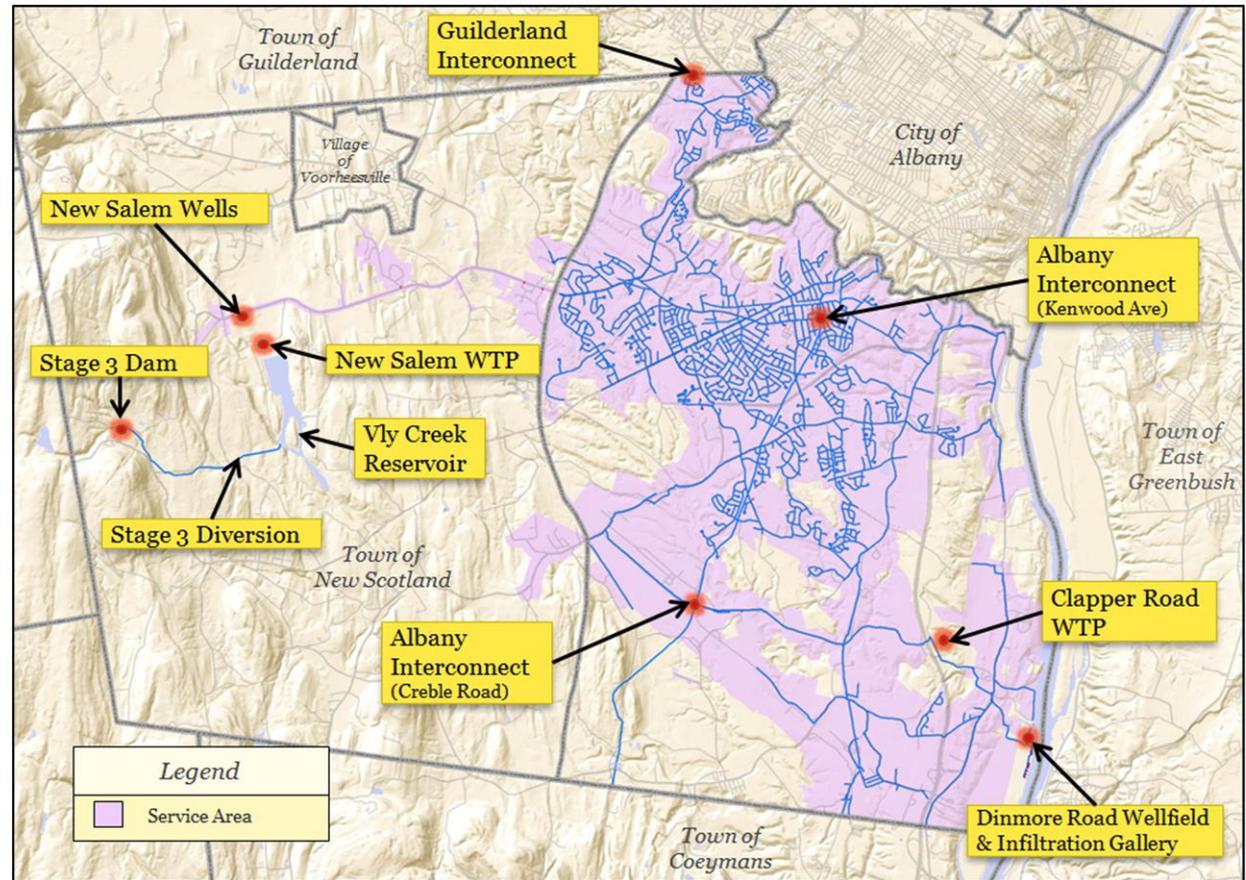


Water Supply Necessities

Source	MGD
Vly Creek Reservoir	3.0
Infiltration Gallery & Dinmore Road Wells	6.0
New Salem Deep Wells	1.13
Albany Water Contract	1.23**
TOTAL	11.36

Note:

1.23 MGD is average of minimum annual contract purchase. Water contract allows the purchase of additional water, if needed, up to 2.5 MGD. However, water from the Albany water contract is already the highest cost supply for Bethlehem and purchase of additional water up to 2.5 MGD would add \$1.75 M to the existing \$1.76 million annual cost for this supply.



Existing Water Supply Resources

Original Construction –
1958

Expanded – 1972

Supply – Vly Creek
Reservoir

Avg. day treatment
capacity – 3.0 MGD

Plant process changed in
2013 to help address
DBP rule

Future upgrades needed
to major equipment –
filters, clarifiers, etc.



New Salem Water Treatment Plant

Original Construction –
1994

Supply – Infiltration
Gallery and Dinmore Road
Well Field

Treatment capacity – 6.0
MGD

Chlorine pre-treatment
system limits capacity to ~
3 MGD

Plant and infrastructure
designed to be expandable
to 12 MGD

Upgrades needed to
address pre-treatment
system and aging plant
infrastructure (controls,
filters, etc.)



Clapper Road Water Treatment Plant

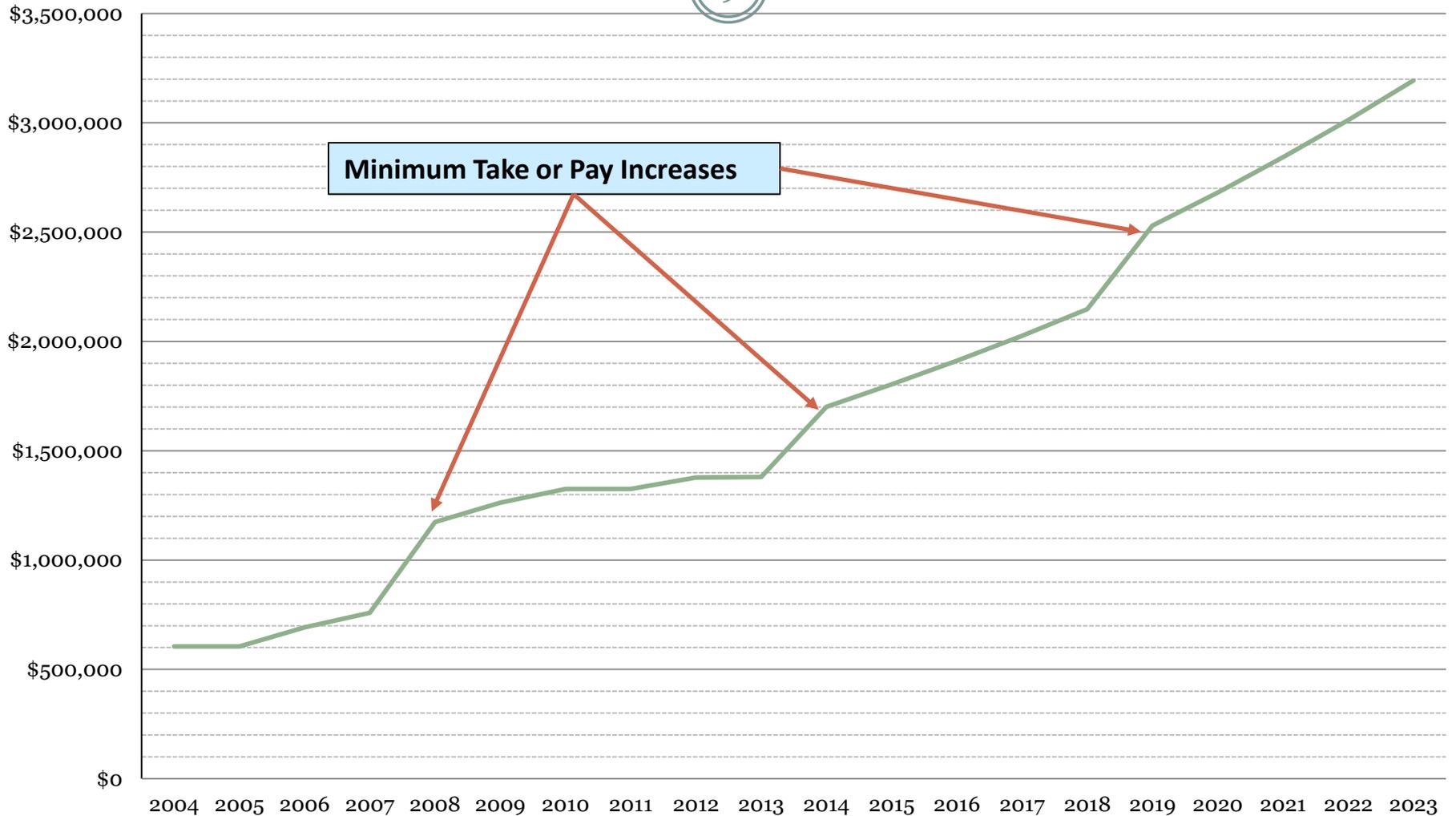
Albany Water Contract

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- **20 Year Contract for Finished Water (2004-2023)**
- **Minimum take or pay, increases every 5th year**
 - Currently 450 MGY = 1.23 MGD
- **Rate increases based on Albany residential rate increases.**
 - Albany Rates have increased 56% since 2004
- **Increase to Water Budget last 10 years:**
 - 2004 - \$605,000
 - 2014 - \$1,760,000 **191%**
- **Current Cost per 1000 gallons = \$3.78**
 - Est. Cost per 1000 gallons at New Salem Wells & NSWTP (2012) ~ \$ 1.73
 - Est. Cost per 1000 gallons at CRWTP (2012) ~ \$1.70

Albany Water Contract

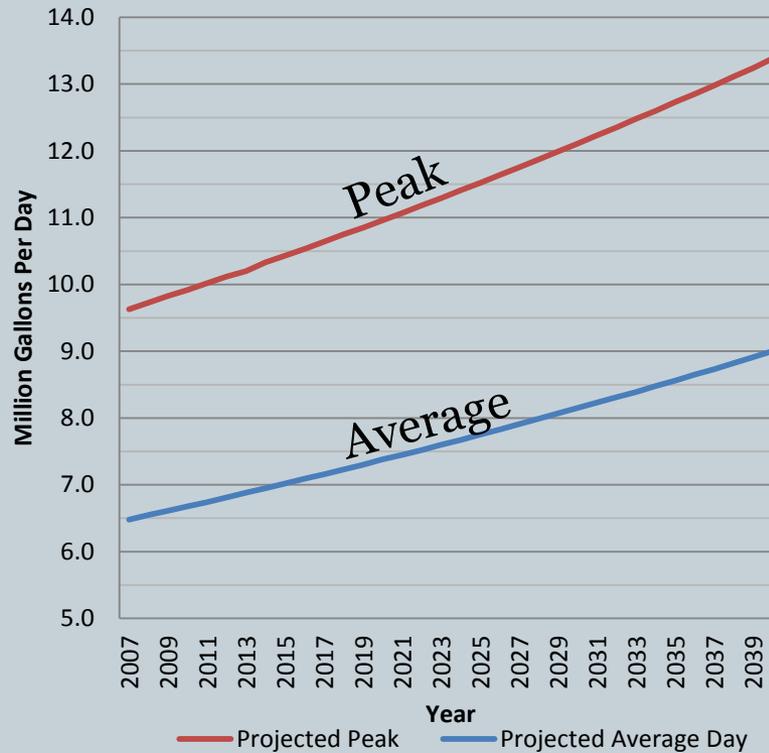
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Peak and Average Demand

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Year	Average Day Demand (MGD)	Peak Day Demand (MGD)
2007	6.48	9.63
2008	6.55	9.73
2009	6.61	9.83
2010	6.68	9.92
2011	6.74	10.02
2012	6.81	10.12
2013	6.88	10.20
2014	6.95	10.33
2015	7.02	10.43
2016	7.09	10.53
2017	7.16	10.64
2018	7.23	10.75
2019	7.30	10.85
2020	7.38	10.96
2021	7.45	11.07
2022	7.52	11.18
2023	7.60	11.29
2024	7.67	11.41
2025	7.75	11.52
2026	7.83	11.64
2027	7.91	11.75
2028	7.99	11.87
2029	8.07	11.99
2030	8.15	12.11
2031	8.23	12.23
2032	8.31	12.35
2033	8.39	12.48
2034	8.48	12.60
2035	8.56	12.73
2036	8.65	12.85
2037	8.73	12.98
2038	8.82	13.11
2039	8.91	13.24
2040	9.00	13.38



NYS Public Health Law and Recommended Standards for Water Works (10-State Standards) require consideration of:

- Existing water consumption data
- Fire flow demand
- Existing population and 20-year growth projections
- Reasonable surplus for anticipated future growth

Projections & Actual

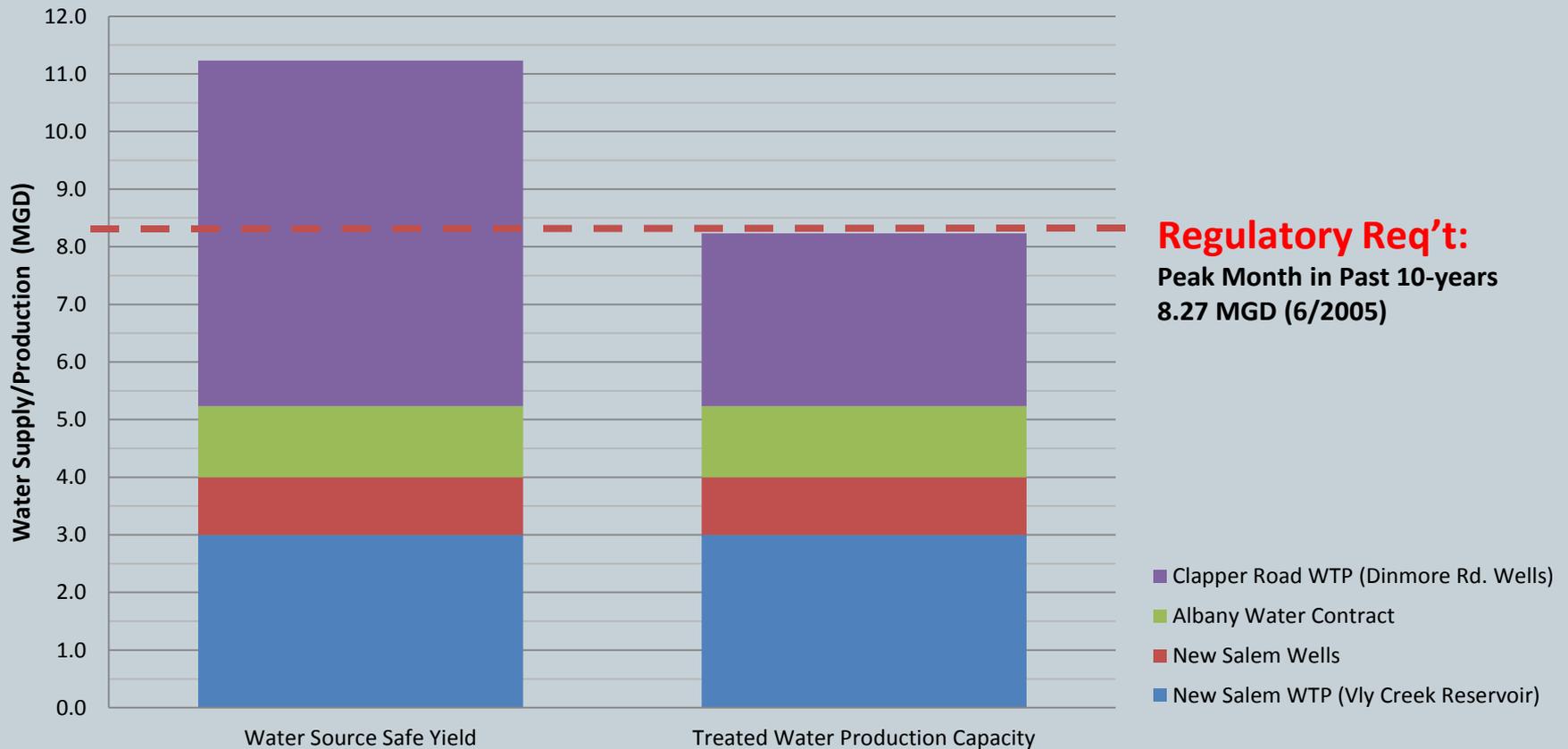
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Regulatory Requirement

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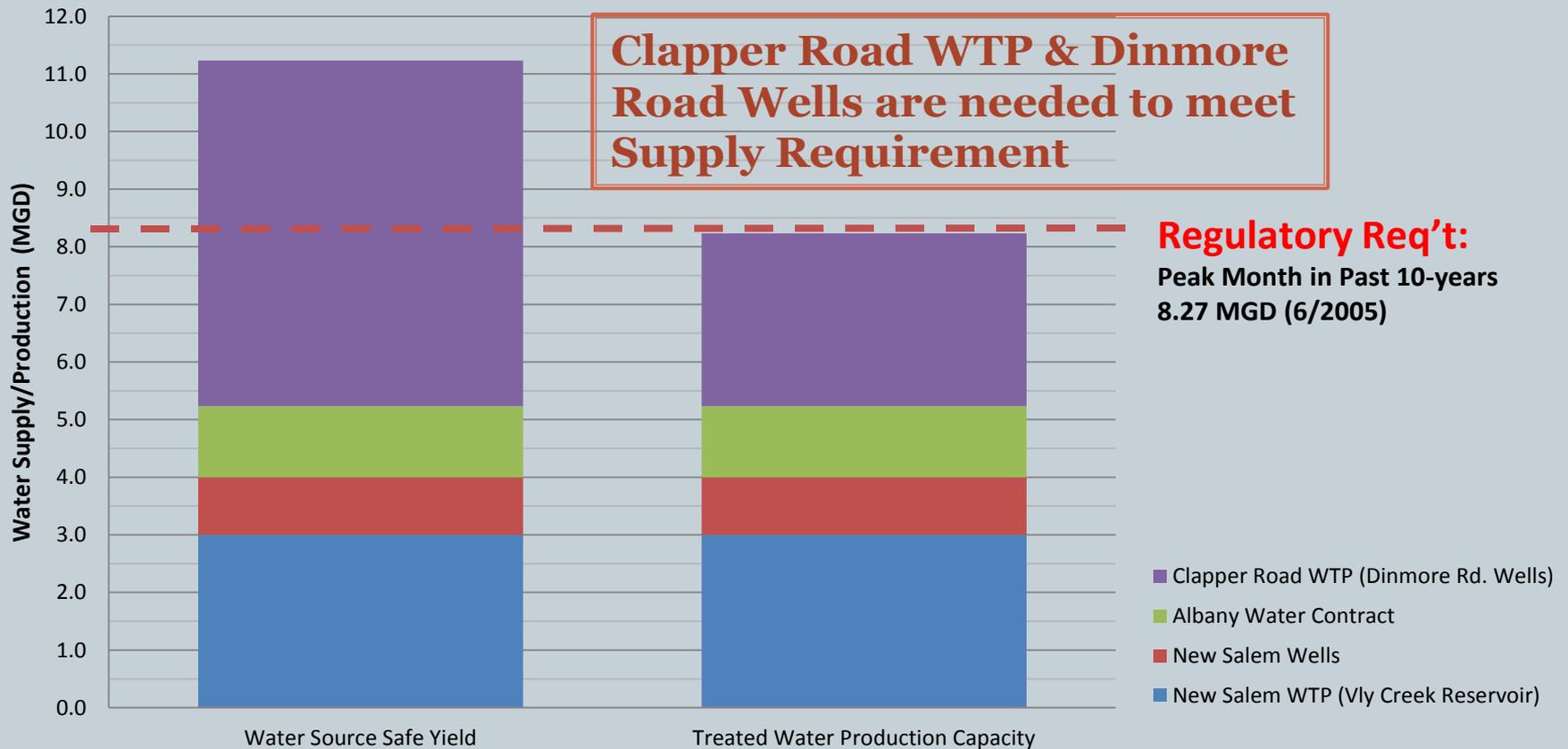
Safe Yield Supply



Regulatory Requirement

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Safe Yield Supply



Planning & Key Decisions (2004 – 2010)

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- 2004: 20-year water contract with Albany
- 2005: Major plant upgrade (\$17M) for New Salem WTP abandoned
- 2006 – 2010: Water supply planning & negotiations with other municipalities
- 2010: Decision to connect water distribution systems and invest in Clapper Road WTP

Planning & Key Decisions (2004 – 2010)

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- **August – October 2010: Several public presentations of *Future Water Supply Alternatives***
 - 3 options for consideration – Rebuild NSWTP; Purchase additional Albany Finished Water; Maximize CRWTP projection
 - Provided capital and long-term costs
 - Discussed source and infrastructure reliability;
 - Accepted public comments
- **October 13, 2010: Town Board voted to open valves and maximize production from CRWTP**
 - Requires pre-treatment improvements at CRWTP
 - Requires maintenance improvements at both WTP
 - Lowest initial and long-term cost
 - No additional long-term contract commitments
 - Minimizes risks related to decreases in demand

Implementation

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- **2010 – 2013**
 - Change sampling & testing locations
 - Corrosion protection evaluation – NSWTP & CRWTP (and Albany) use different corrosion treatments
 - Water modeling – new operating conditions, water age
 - Evaluate new Disinfection Byproduct (DBP) potential
 - New Salem WTP improvements
 - ✦ Filter valve replacements
 - ✦ New pipeline from NSWTP to Route 85 for DBP compliance
 - ✦ Process changes and plant piping for DBP compliance
 - ✦ Coagulant testing

Implementation

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- **Clapper Road WTP Improvements**
 - Town Board authorized funding and contract with Hazen & Sawyer for design services – November 2013
 - ✦ Address violations related to DBP compliance
 - ✦ Optimize pre-treatment to address iron & manganese – increases plant production capacity to 6 MGD
 - ✦ Remove settled iron from raw water reservoir & pipeline
 - ✦ Permitting & pilot testing

- **Albany water contract**
 - New administration
 - Are there opportunities to improve the water purchase contract for Bethlehem and Albany?

Additional Information

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- For additional water supply information go to Department of Public Works, Water Division website:
<http://www.townofbethlehem.org/181/Water-Division>
- Projected Average and Peak Demands
- Future Water Supply Alternatives Presentation – 10/2010
- Budget Advisory Group Report – 6/2012
- Webcast of the Budget Advisory Group Report – 6/2012
- Webcast of Clapper Road WTP upgrade presentation – 11/2013
- Annual Water Quality Reports

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QUESTIONS