



Resource Recovery & Electrical Energy (R2E2) Open House

Village of Allouez

Speakers: Tom Sigmund and Nathan Qualls

November 10, 2015



Agenda

- NEW Water Background Information
- R2E2 Video
- R2E2 Project Update
- Q&A

An aerial photograph of the Great Lakes region in North America. The five Great Lakes (Superior, Michigan, Huron, Erie, and Ontario) are visible as large, dark blue-green bodies of water. The surrounding land is a mix of green vegetation and brownish terrain. The text "The Value of Water: Environment, Economy, Life" is overlaid in white, italicized font in the upper right quadrant.

*The Value of Water:
Environment, Economy, Life*

Who is NEW Water?



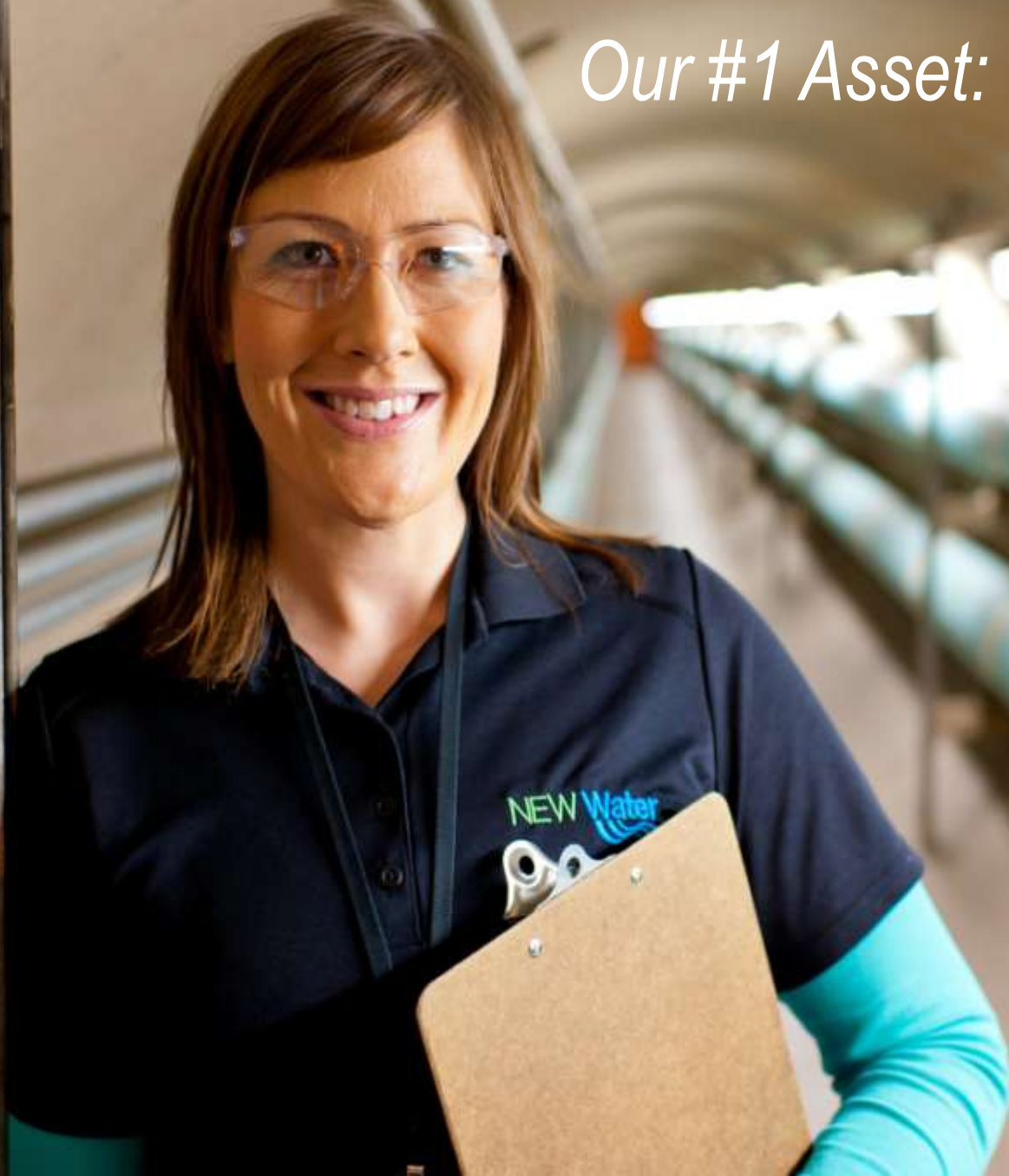
How do we treat water?
We speed up mother nature



Award-Winning Effluent



Our #1 Asset: Our People



*Highly Trained, Skilled
Workforce*



Around-the-Clock Water Stewards



Ensuring a Transfer of Knowledge



Outreach and Education



Community Partnership & Leadership



Why Our Work Matters



Photo Credit: The Nature Conservancy



R2E2 Video





R2E2 Project Update

Presented By: Nathan Qualls, Director of Technical Services



PROTECTING OUR MOST VALUABLE RESOURCE, WATER





NEW Water Infrastructure

- \$300M in fixed assets, 2 facilities, 110 miles of interceptors, 1,183 manhole structures, air releases, lift stations, wet wells, meter stations, junction chambers






Opportunities and Challenges: Clean Water Industry

- Managers of valuable resources to be recovered and reused
- Maximize net benefits to the community and the environment
- Maintain desired level of service with aging infrastructure
- Develop strong partnerships with external stakeholders
- Finance needed improvements





Resource Recovery and Electrical Energy Generation (R2E2)





Background Information

2008 – Initiated planning for future of solids handling

Three main drivers:

- Aging infrastructure
- Environmental regulations
- Increased capacity needs

2011 – Completed the *Solids Management Facility Plan*

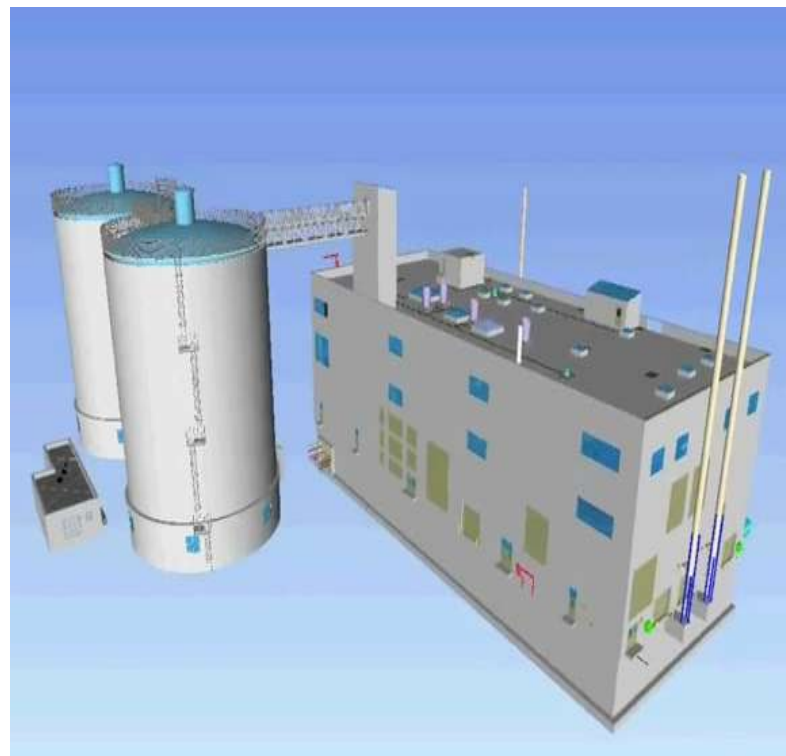




R2E2 – What is it?

Most cost-effective solution to replace solids handling at the Green Bay Facility

Tools to treat wastewater as a resource





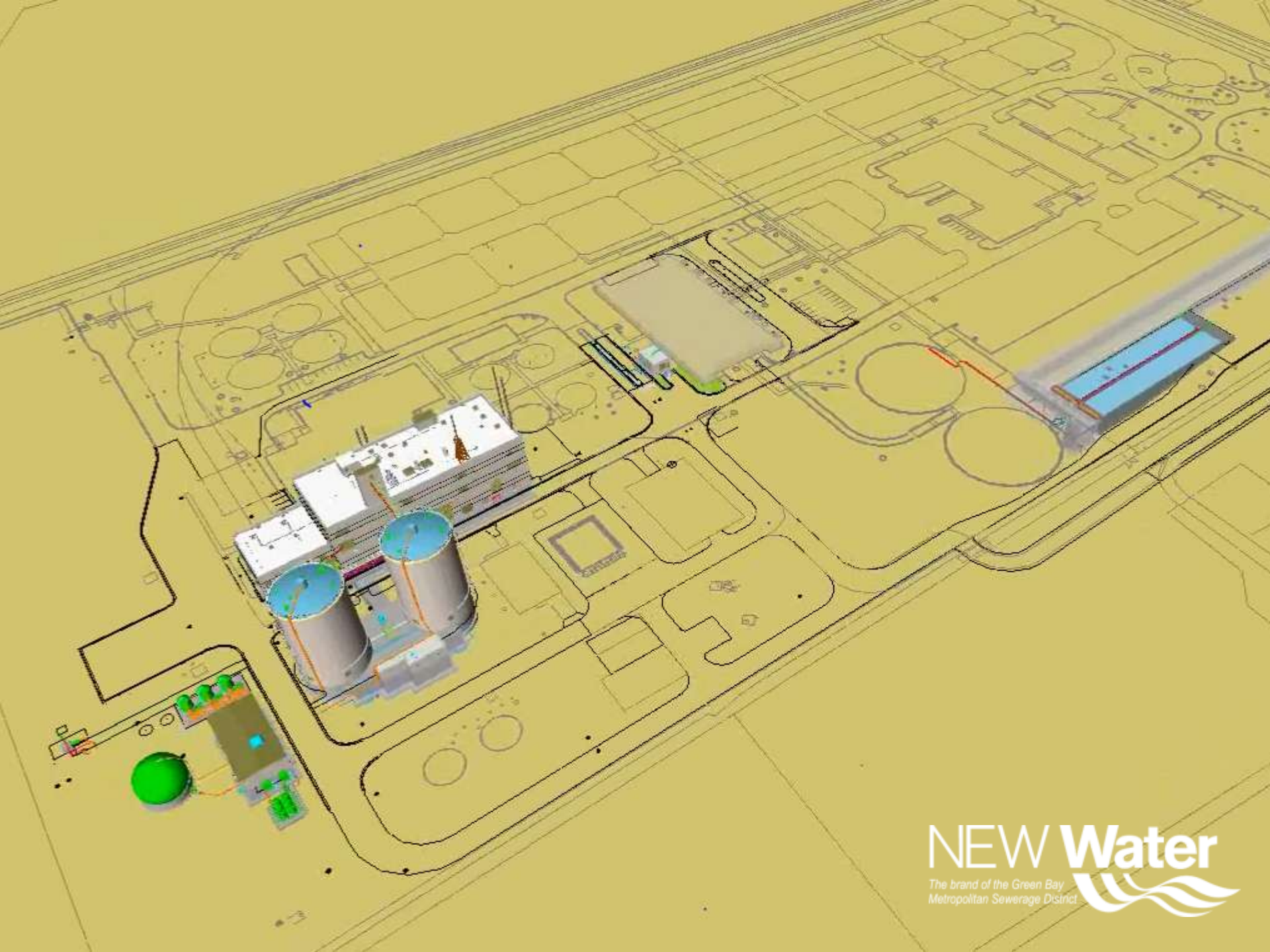
NEW Water
The brand of the Green Bay
Metropolitan Sewerage District





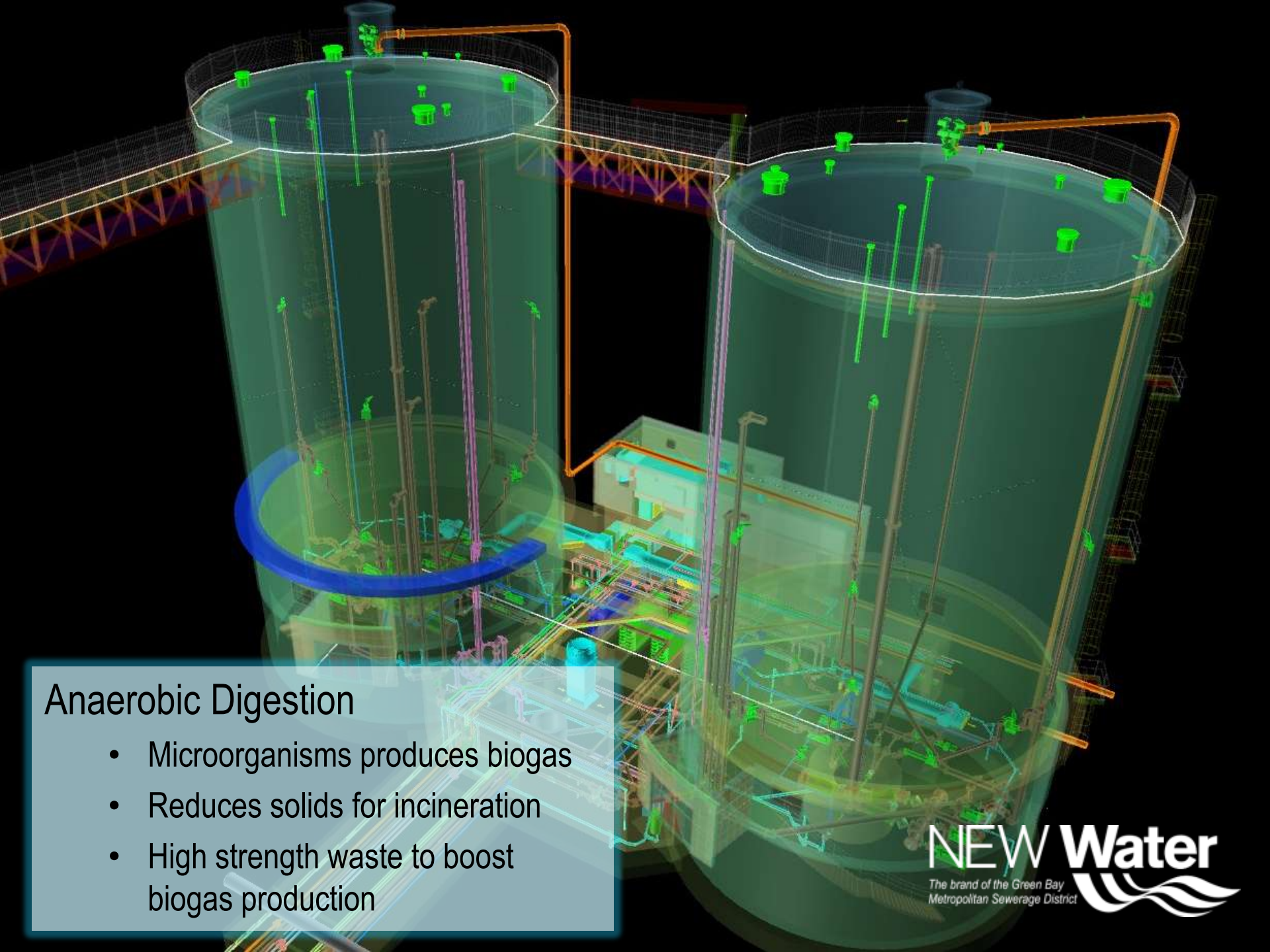
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Anaerobic Digestion

- Microorganisms produces biogas
- Reduces solids for incineration
- High strength waste to boost biogas production

Electrical Energy Generation

- Burns biogas from digestion
- Can blend in natural gas
- Recovery of generated heat





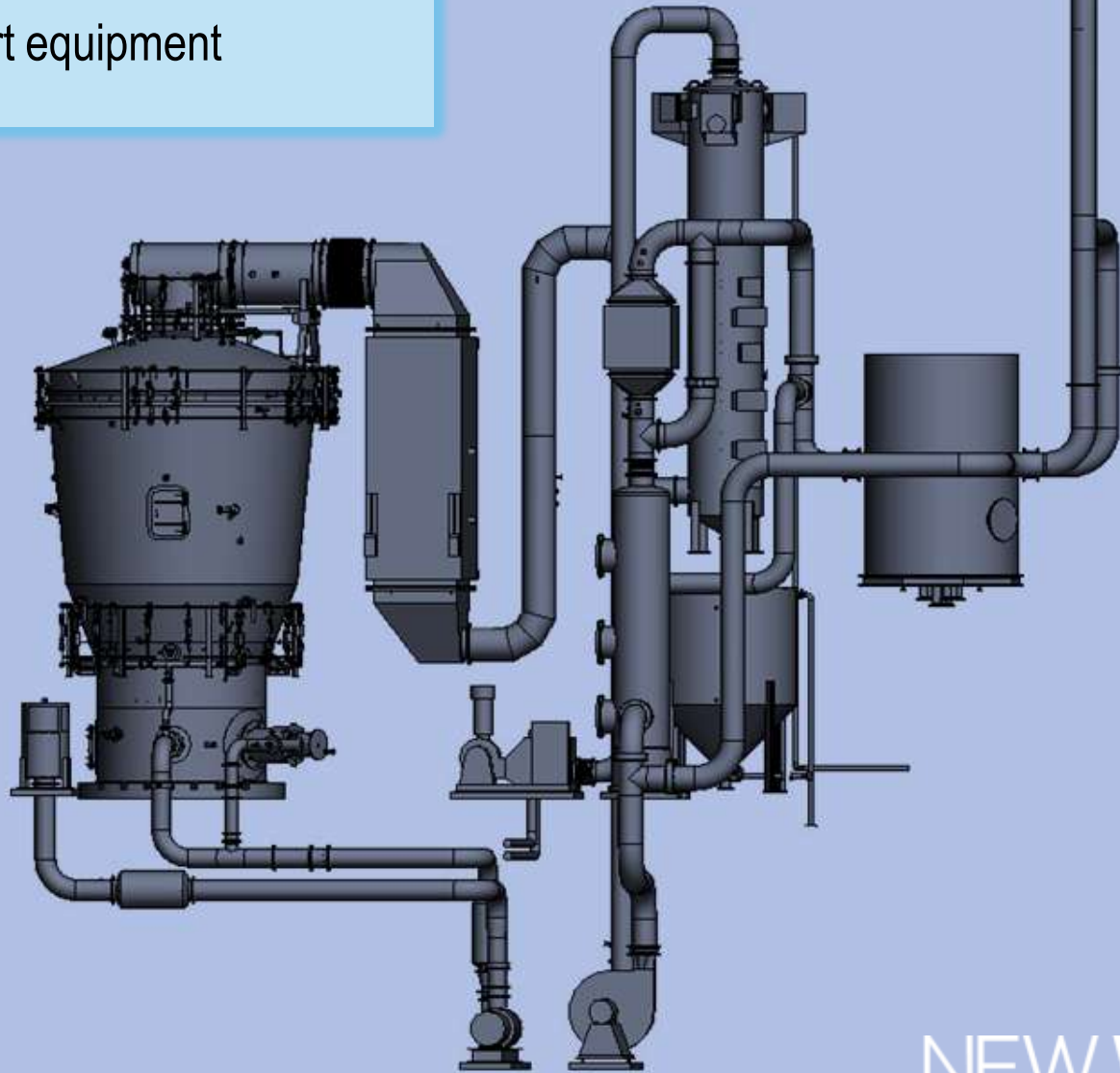
Fluidized Bed Incineration

- Thermal oxidation of solids
- Recover heat from exhaust
- Heat to pre-dry solids



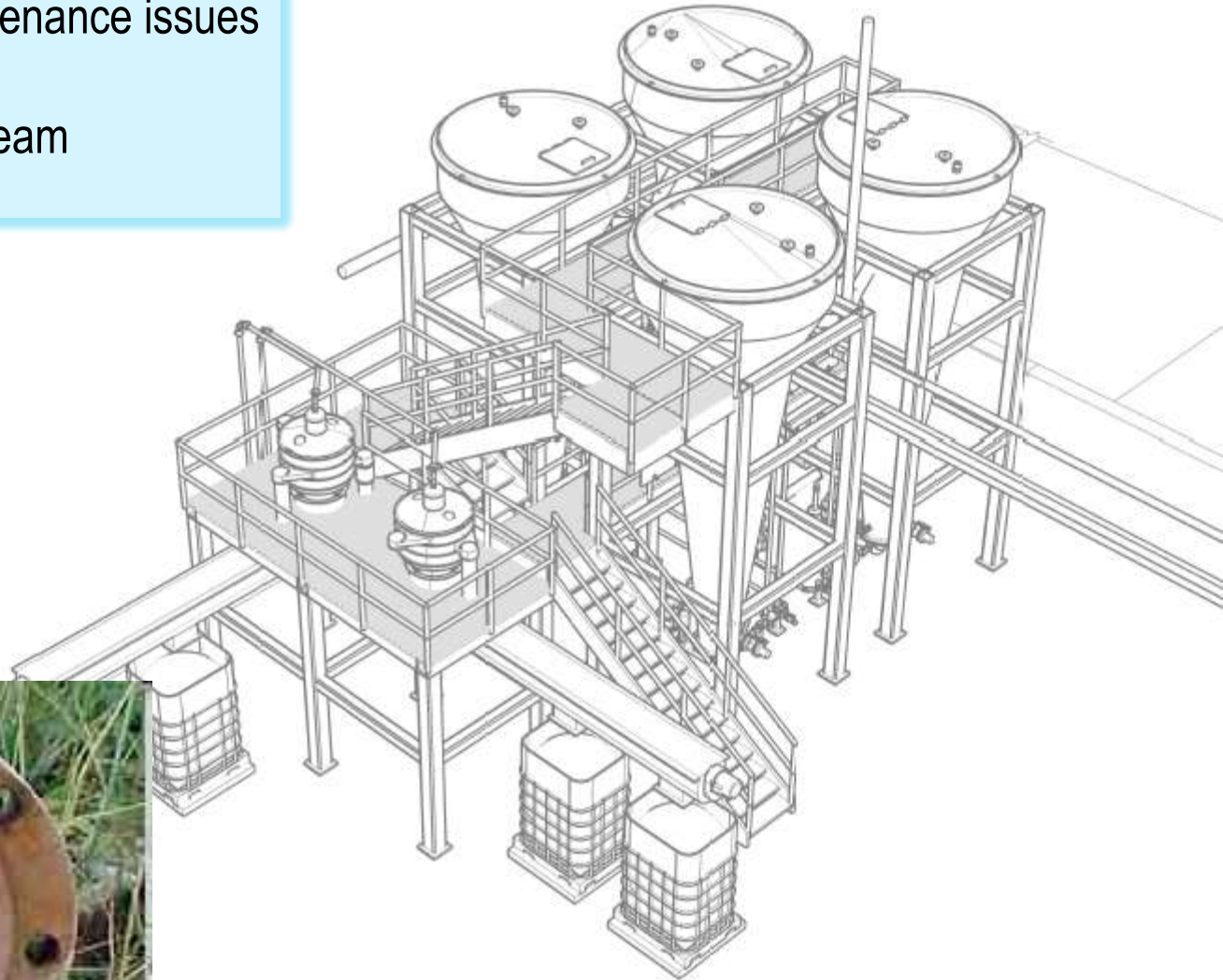
Air Pollution Control Equipment

- Meets new, stricter limitations
- State-of-the-art equipment



Nutrient Recovery System

- Reduces struvite maintenance issues
- Beneficial reuse
- Generates revenue stream



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R2E2 Timeline

- Planning Stage (2008-2011) **Complete**
- Design Stage (2012-2015) **Complete**
- Equipment Procurement (2013-2014) **Complete**
- Construction Project #1 (2014) **Complete**
- Construction Project #2 (2015-2018) **Underway**
- Implementation (2018)
- Construction Project #3 (2019)



Electrical Power Distribution & Switchgear Building Construction



Electrical Switchgear Installation



Site Preparation for Digesters



Site Preparation for Solids Facility



Site Preparation for Solids Facility



New Site Storm Water Treatment



New Site Storm Water Treatment



New Site Storm Water Treatment





R2E2 Costs

Project Phase	Approximate Costs
Engineering Services	\$25,000,000
Fluidized Bed Incinerator Equipment	\$21,200,000
Construction Project #1	\$6,300,000
Construction Project #2	\$114,000,000
Construction Project #3	\$2,500,000
Total	\$169,000,000

In 2013, NEW Water initiated four years of rate increases to pay for R2E2 debt service.





R2E2 Benefits

- Addresses the original project drivers:
 - Aging infrastructure
 - Environmental regulations
 - Increased capacity needs
- Lowest cost plan over a 20-year planning period
- Generate about 50% of NEW Water's energy needs





R2E2 Benefits

- By producing much of its own energy, NEW Water will be able to minimize expenses as energy costs rise in future years
- Accept different wastes (i.e. dairy, sugar, and food processing) that can boost energy production
- Reduce greenhouse gas (CO₂) emissions by approx. 22,000 metric tons per year, which is the same as removing about 15,000 vehicles from the road
- Struvite is a slow release fertilizer; \$400,000/year revenue





Questions/Comments?

Thank you for coming!

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follow us on social media*



www.newwater.us