Integrated Capital and Energy Planning (ICE), a Holistic Approach

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Is your municipality operating at peak efficiency? How will local governments and ratepayers be able to afford costly asset renewal projects now and into the future? These days, everyone is expected to do more with less; meanwhile the sustainability and environmental stewardship goal line continues to move. How does your town score on this checklist of several key challenges?

Aging Infrastructure	yes	no
Limited Grant Funding	yes	no
Taxation Cap	yes	no
Declining Revenues	yes	no
Brain Drain (loss of key staff)	yes	no
Stringent Regulatory Goals	yes	no

Integrated Capital and Energy (ICE) Master Planning may be the answer. For years, each necessary repair is treated as a singular, isolated event. For example, power washing a tank to make it aesthetically pleasing, replacing a section of waterline to deal with frequent break issues, welding a boiler tube to limp through another winter heating season, or chemically treating filter media to get through another year. This unfortunate "Band-Aid" approach, which so many are forced to choose, does not provide a comprehensive look at how these systems work together, or whether there is a better way to take care of your assets and fix the problem versus kicking the can down the road.

ICE Offers Technical and Budget Solutions

ICE is a method of holistic master planning, evaluating the individual capital projects you need to complete to continue operating your facilities and meeting permit requirements. Approaching solutions through the lens of energy allows these needed improvements to be opportunities to increase efficiency and optimization operations helping to fund your projects. Detailed analysis quantifies energy and operational savings over the debt repayment schedule as well as the life of the new equipment. Annual savings and grants are identified that are leveraged to allow a town to self-fund improvements, making the improvements fiscally feasible. The ICE approach balances life asset renewal requirements with the triple bottom-line approach. This approach balances environmental, social and economic factors to create a holistic solution for tax and ratepayers.

Case Example

Town of Chenango, NY

The Town of Chenango needed assistance as it looked to reduce energy usage, operational costs and increase revenue. The project funded energy-related improvements for

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the town's water and wastewater facilities, allowing the town to renew assets at the end of their useful life. This approach has allowed the town to cost-effectively address the need for more complex treatment processes to comply with Chesapeake Bay Water Quality Initiatives.

The town was able to enhance the treatment efficiency of the existing SBRs by upgrading the diffusers within the existing basins, eliminating the need to construct a new SBR basin at a space-limited site. The town was also able to utilize new technologies and equipment to further reduce its energy usage and carbon footprint.

This project included upgrades such as:

- Aeration Ultra Fine Bubble Diffusers and Blower Upgrade
- Automated Dissolved Oxygen Control System
- Solids Dewatering Upgrade
- Addition of Bar Screen and Grit Removal System (plant did not have headworks facilities)
- Town-wide Water Meter Replacements & Automatic Meter Reading System

Planning Phase. *Make an Informed Decision.* An ICE Program may start with a general feasibility or energy study in order to explore the obvious (the "seen"), as well as what is hidden below the surface (the "unseen"). The ultimate focus is on energy efficiency improvements, operational cost reductions and maximizing project funding through grants, energy incentives and low-interest loans. Generating positive economics can go a long way to obtaining board approval for needed capital upgrades.

Comprehensive, well-conceived strategic and capital planning can help guide your town to the most logical, cost-effective solutions for meeting project objectives and achieving

short- and long-term business goals. Working with the client's team, engineers will assist in identifying what enhancements exist to develop and execute strategic plans for optimizing spending, and significantly reducing, the cost of operations and life cycle maintenance.

Project Improvements. Project improvements may occur at water and wastewater treatment systems along with other town facilities such as public works, office and court buildings, and recreational centers and ice rinks. Improvements may

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include LED interior lighting, pumping and pump station upgrades, filtration system upgrades, SCADA and facility management system improvements, building heating and cooling system replacements and LED street lighting to name a few.

Implementation. There are several options to implement a project, and they include:

A. Self-Install – utilize in-house resources as available

B. Design-Bid-Build – the traditional method for local governments

C. Design-Bid – limited by legislation in New York State

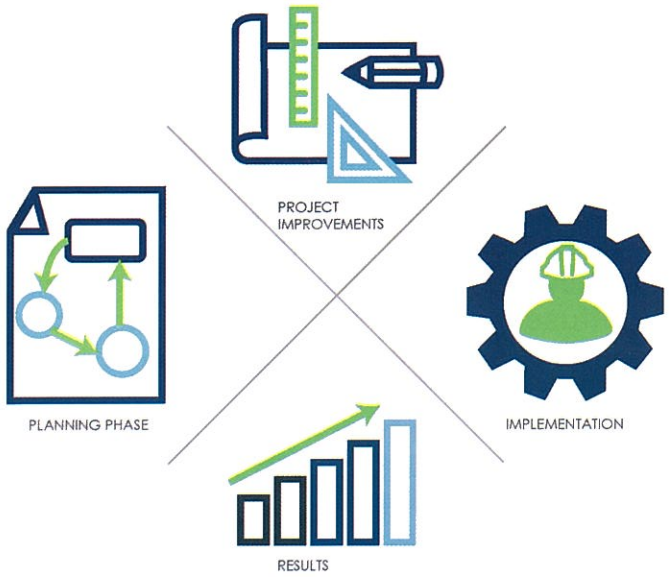
D. Master Builder – a legal hybrid design-build approach led by design professionals

E. Energy Performance Contract – a legal form of design-build in New York State

Several results can be achieved, regardless of the method of implementation chosen.

Results:

1. Reduce energy, operational and maintenance costs
2. Decrease utility costs to help mitigate tax cap challenges towns face
3. Protect the environment by reducing carbon emissions and becoming more sustainable
4. Increase revenue and obtain more grant funds
5. Integrate energy efficiency into capital improvement programs
6. Meet more stringent regulatory requirements
7. Improve occupant and work environments
8. Enhance existing workforce efficiency



ICE helps create a world where capital improvements pay for themselves, freeing municipalities from having to impose more burdens on their tax and rate payers.

Conclusion

Opting for an ICE approach can bring with it several benefits. The concept looks through the lens of energy efficiency and optimization opportunities that will help fund future projects. Asset renewal integrated with energy efficiency brings economic, social and financial benefits. The master plan allows the town to move forward on a sustainable basis for both current and future scenarios.

Integrated Capital and Energy (ICE) master planning is a holistic approach, a financial and technical solution, and will aid in the evaluation of individual capital projects needed to continue operations. Instead of looking at required equipment replacement projects with dread, realize that utilizing the ICE program transforms these issues into opportunities to optimize the return on your future investments. ❐