



Smart Management for
Small Water Systems

Prioritizing Energy Management Projects



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NYSERDA Step 5: Prioritize Opportunities for Implementation

- The final product of this step is a short list of energy efficiency opportunities that have been selected and carefully evaluated out of the list of opportunities generated in the previous step
- *Identify a consistent method to compare and rank opportunities (consider both the monetary and non-monetary)*



How should I prioritize?

- There are many processes you could use to prioritize energy management projects for your water or wastewater utility.
- One resource for process review is the *Energy Project Decision Matrix*, developed as part of *A.M. Kan Work!* – an interactive guide to asset management and energy efficiency from the New Mexico Environmental Finance Center and Kansas Department of Environmental Health.



Instructions: Energy Project Decision Matrix

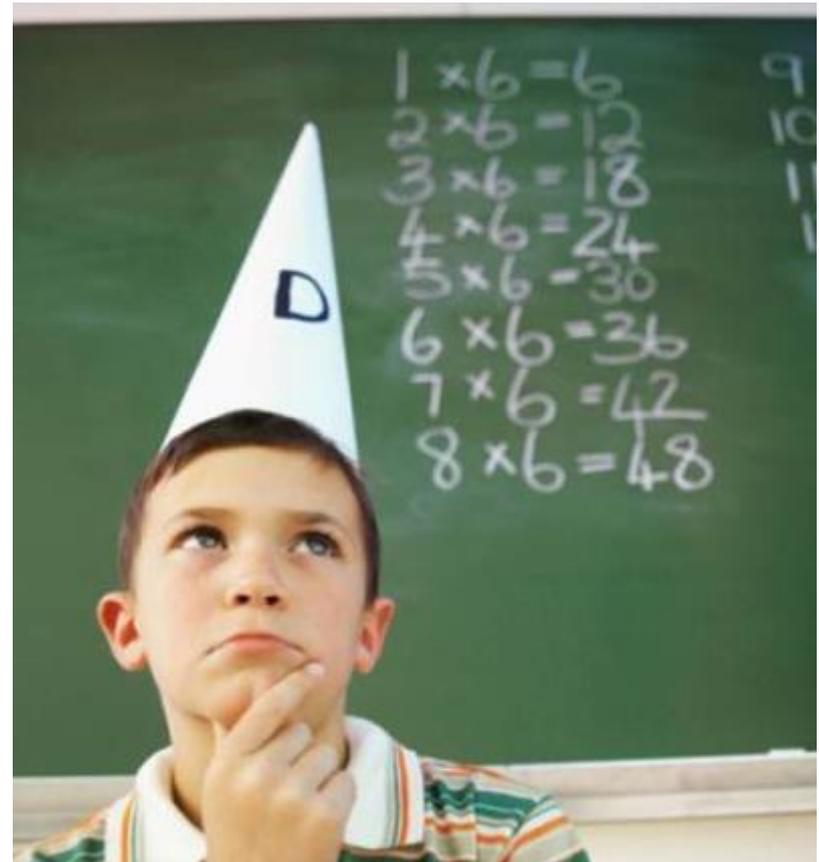
Guidelines for assigning points from 1 to 5 using the Energy Project Decision Matrix from A.M. Kan Work!

Category	Suggested Guidelines
Energy Cost Savings	Current energy cost less future energy cost; high energy savings = 5 points; low energy savings = 1 point
Cost of Implementation	Total cost of the energy management project; low cost = 5 points; high cost = 1 point
Payback Period	Number of years required to pay for the project with energy cost savings; low number of years = 5 points; high number of years = 1 point
Necessary to Meet Regulatory Requirements	If needed to meet current regulatory requirements = 5 points; anticipated requirement = 3 points; no requirement = 1 point
Necessary to Meet Level of Service Goals	If needed to meet a level of service (LOS) goal, such as energy reduction or greenhouse gas emissions goals = 5 points; no LOS goal = 1 point
Availability of Advantageous Funding	If the project can be funded with existing internal sources or there is a good external source, such as a tax rebate or grant = 5 points; no advantageous funding = 1 point
Operational Feasibility	If the project can be operated within the capabilities of the existing staff = 5 points; if considerable operational change is required = 1 point
Part of a Larger Project	If the energy management project is part of a larger project = 5 points; stand-alone project = 1 point
Total Score	The energy management projects with the highest scores may be the most advantageous to the utility



Scoring in the Decision Matrix

- Score each category from 1 to 5. Bigger numbers are better! 😊
- In other words, higher scores are more attractive projects for energy savings, ease of implementation, and so on.





Energy Cost and Implementation Cost

- Energy Cost Savings: Current energy cost less future energy cost.
 - High energy savings = 5 points
 - Low energy savings = 1 point
 - Could also boost score to reflect use of renewable energy, if that has value to your utility.
- Cost of Implementation: Total project cost.
 - Low cost = 5 points
 - High cost = 1 point



Payback Period and Regulation

- Payback Period: Number of years required to pay for the project with energy cost savings.
 - Low number of years = 5 points
 - High number of years = 1 point
- Necessary to Meet Regulatory Requirements:
 - 5 points if needed to meet a current regulatory requirement
 - 3 points for an anticipated requirement
 - 1 point for no regulatory requirement



Service Goals and Funding Options

- Necessary to Meet Level of Service Goals:
 - 5 points if needed to meet a level of service goal, e.g. energy reduction or GHG emissions goals
 - 1 point if no Level of Service Goal
- Availability of Advantageous Funding:
 - 5 points if the project can be funded with existing internal sources or there is a good external source, such as a tax rebate or grant.
 - 1 point if no advantageous funding.



Feasibility and Larger Projects

- Operational Feasibility:
 - 5 points if the project can be operated within the capabilities of the existing staff (e.g. easy training)
 - 1 point if considerable operational change required
- Part of a Larger Project:
 - 5 points if the energy efficiency project is part of a larger project
 - 1 point if it is a stand-alone energy project



Observations about the Matrix

- Total Score: allows you to compare / rank potential energy management projects.
- Higher Scores: indicate E.M. projects that may be most advantageous to the utility.
- Caution: As all columns are weighted equally in this matrix, you may want to consider some columns as more important than others.
- And don't forget: Watch out for Agent Smith!



Tips for Using the Decision Matrix

- Involve your energy team and discuss evaluation criteria (You can use the matrix provided as a starting point.)
- Set weights based on the level of importance to your system.
- What's missing? In addition to the matrix, other commonly used criteria may include:



Tips for Using the Decision Matrix

- Ease of implementation
- Time until solution is fully implemented
- Cost to maintain
- Support or opposition to the solution
- Enthusiasm by team members
- Potential effects on customers
- Potential problems during implementation



Tips for Using the Decision Matrix

- If individuals on the team assign different ratings to the same criterion, discuss this so people can learn from each other's views and arrive at a consensus. Do not average the ratings or vote for the most popular one.



Some Keys to Success

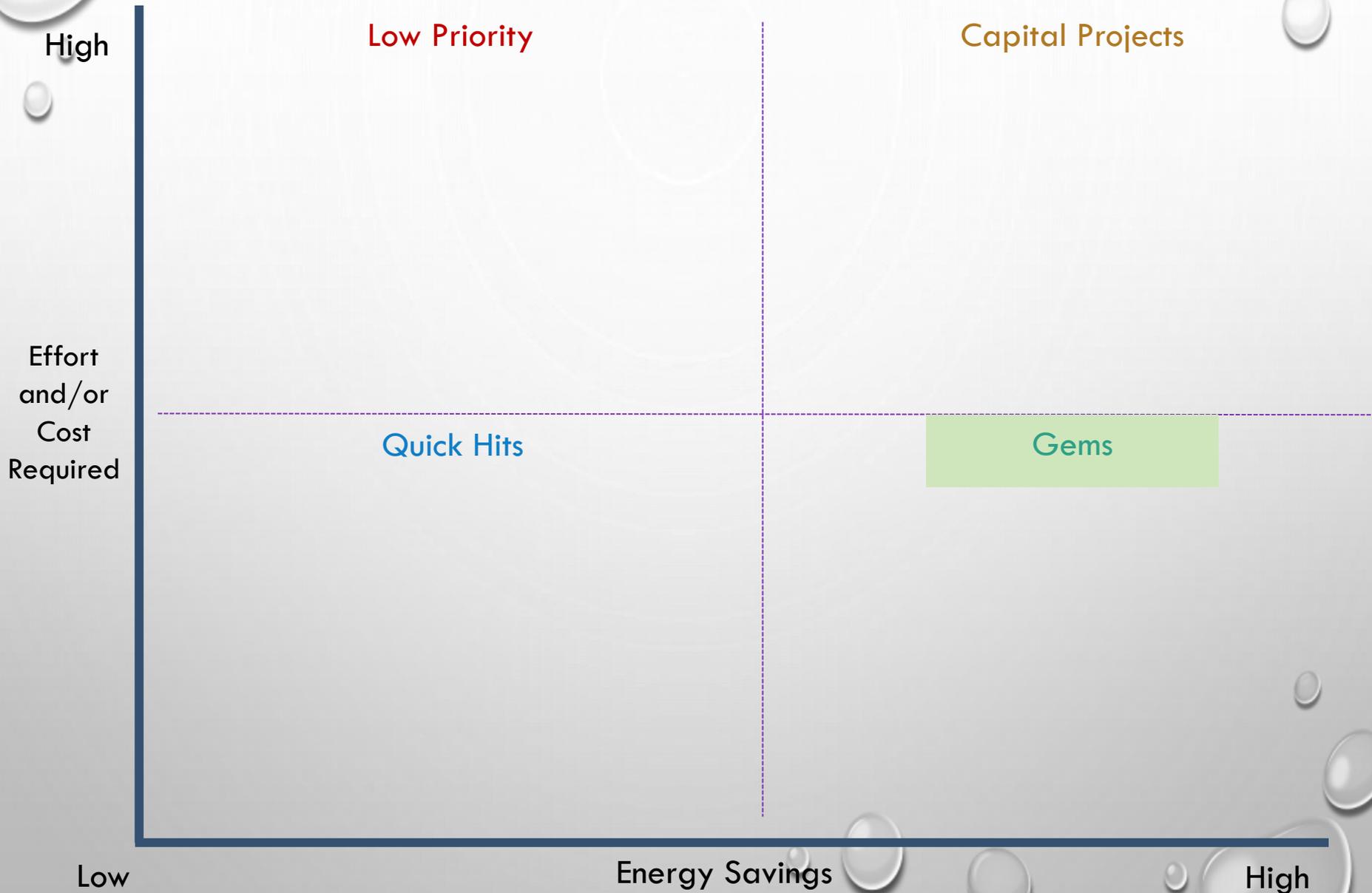
- Convert all energy efficiency opportunities characteristics to monetary terms whenever possible.
- Evaluate all energy management, including ancillary benefits when possible.
- Test the sensitivity of results to determine the impact of important assumptions (e.g. time horizons)
- Make sure that the final results make sense in terms of the utility's capabilities.



Group Exercise



EXERCISE: ENERGY PROJECT PRIORITIZATION



Energy Project Decision Matrix

Energy Project Decision Matrix									
Proposed Energy Efficiency Project	Energy Cost Savings (1 to 5)	Cost of Implementation (1 to 5)	Payback Period (1 to 5)	Necessary to Meet Regulatory Requirements (1 to 5)	Necessary to Meet Level of Service Goals (1 to 5)	Availability of Advantageous Funding (1 to 5)	Operational Feasibility (1 to 5)	Part of a Larger Project (1 to 5)	Total Score

Your small water system could reduce electrical energy use by implementing numerous strategies, including:					
Process Targeted / Goal	Improvement and Estimated Savings	Implementation Cost (\$)	Estimated Annual Energy Savings (kWh)	Estimated Annual Cost Savings (\$)	Simple Pay-Back (Years)
Lighting (A)	Reduce number of lighting hours by 40%	No cost. Turn lights off.	7,488	\$4,118	0
Lighting (B)	Replace T12 fluorescent light bulbs and fixtures with T8 equivalents	\$12,470	22,976	\$10,800	1.15
High Service Pumps	Replace high service pumps with premium efficiency ones at two pumping locations	\$52,400	34,640	\$19,052	2.75
HVAC and Window Films	Replace air conditioning with high efficiency system and install window films to reduce solar heat gain	\$218,382	138,104	\$64,909	3.36



Think – Pair – Share





Questions?