Efficiency Vermont

REDUCING MUNICIPAL ENERGY COSTS

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Workshop Overview

- Overall Process
- Buildings
- Streetlights
- Treatment plants
- Vehicle fleets

This workshop identifies opportunities and resources to help you.

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OVERALL PROCESS

- Form a team
- Build support
- Compile data
- Set priorities for energy saving opportunities
- Decide on financing approach
- Undertake efficiency improvements and monitor results

Form a Team

- A group of 5-7 people with a diverse range of skills and experience
- 150 town energy committees or energy coordinators in VT
- Energy committees can play a key role in ushering the process
- See Vermont Energy and Climate Action Network (VECAN) website - www.vecan.net

Build Support

- Enlist the support of municipal officials
- Work in partnership with municipal officials to reduce municipal energy costs
- Communicate cost and savings information
- Make information available through a variety of forums

Compile Data

- Municipal energy costs often embedded in different departmental budgets
- Compile data on municipal energy bill
- Compile electrical and fuel bills for each municipal energy use
- EPA has a program to help municipalities benchmark their buildings and treatment facilities - www.epa.gov/region1/eco/energy/ energy-challenge.html

Identify and Set Priorities

- Conduct audits/assessments of energy saving opportunities
- Tap into appropriate expertise
- Efficiency Vermont can provide relevant technical assistance or provide access to assistance

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Consider Financing/Funding Options

- Grants
- Efficiency incentives
- Budget and capital reserves
- Bonding
- Loans
- Performance contracting
- Tax-exempt lease purchase

Differentiating "funding" from "financing"

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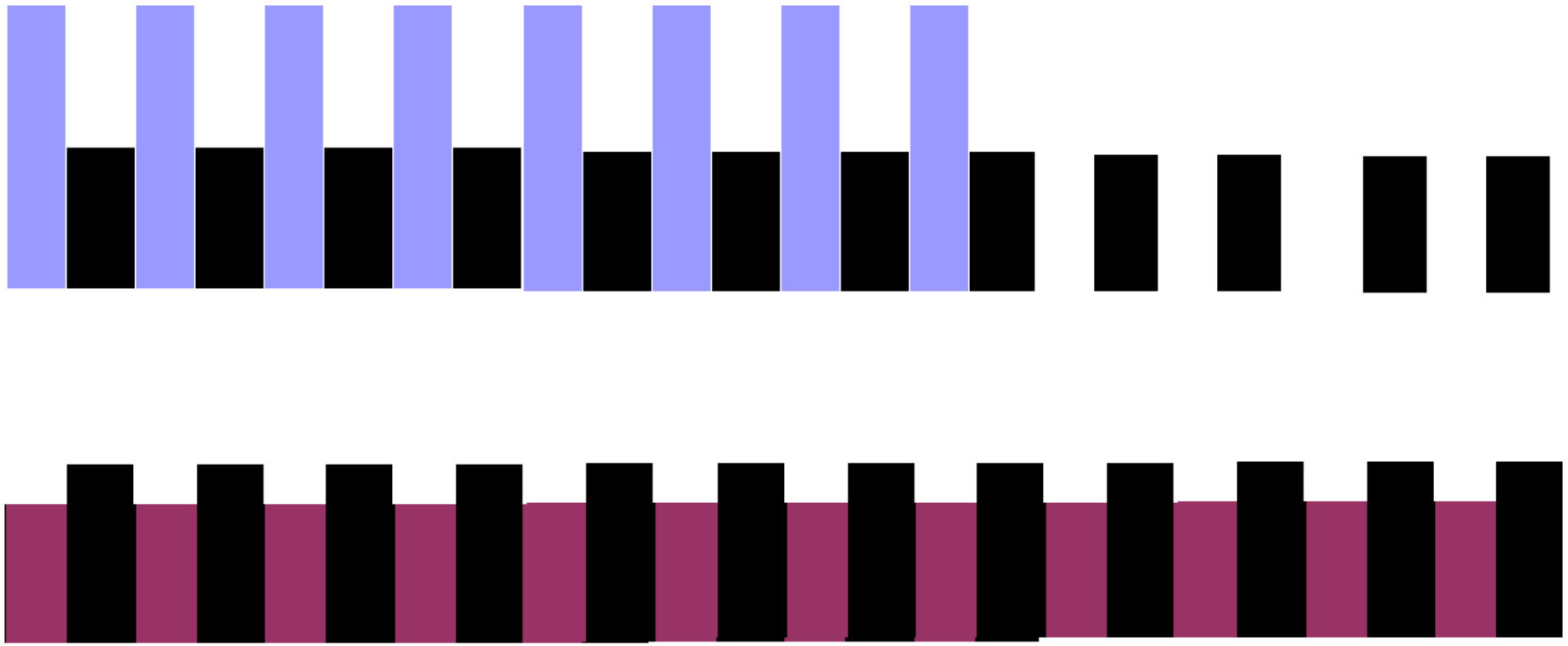
Financing

Align the period of payment with the period of the savings



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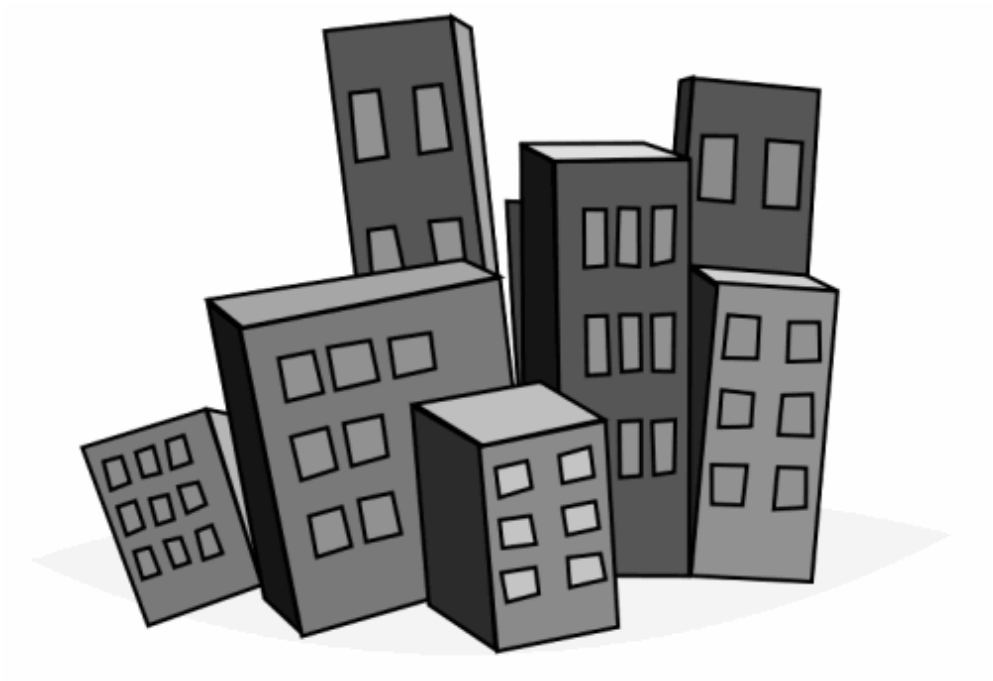
Implement and Monitor

- Secure funding/financing
- Prepare necessary documentation/engineering
- Prepare RFP/bid
- Review bids/proposals and award contract
- Oversee project implementation
- Monitor results

BUILDINGS



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Conduct Walk-Through Assessment

- Walk-through is a basic information-gathering tool
- Not a professional audit
- Provides basic information about energy saving opportunities
- Involves visual inspections of air leakage, insulation, heating equipment, and electrical uses

Conduct Professional Energy Audit

Includes:

- Visual inspection of insulation levels and possibly an infrared scan
- Blower door test -- (residential-style structures)
- Health and safety diagnostic testing
- Recommendations for electrical upgrades
- Audit report

STREETLIGHTS

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Eliminate Unnecessary Streetlighting

Eliminating unnecessary lighting is most cost-effective action

- Many lights were placed 20-30 years ago or longer
- No longer serving purpose they were intended for
- Ensure that lighting needs match lighting levels

Utilize LEDs

Technology Overview

- LEDs are the next advancement in technology
- Flat chips versus round lamps
- Higher efficiency
- Improved light quality
- Reduced maintenance

WASTEWATER TREATMENT PLANTS

Castleton Wastewater Treatment Facility

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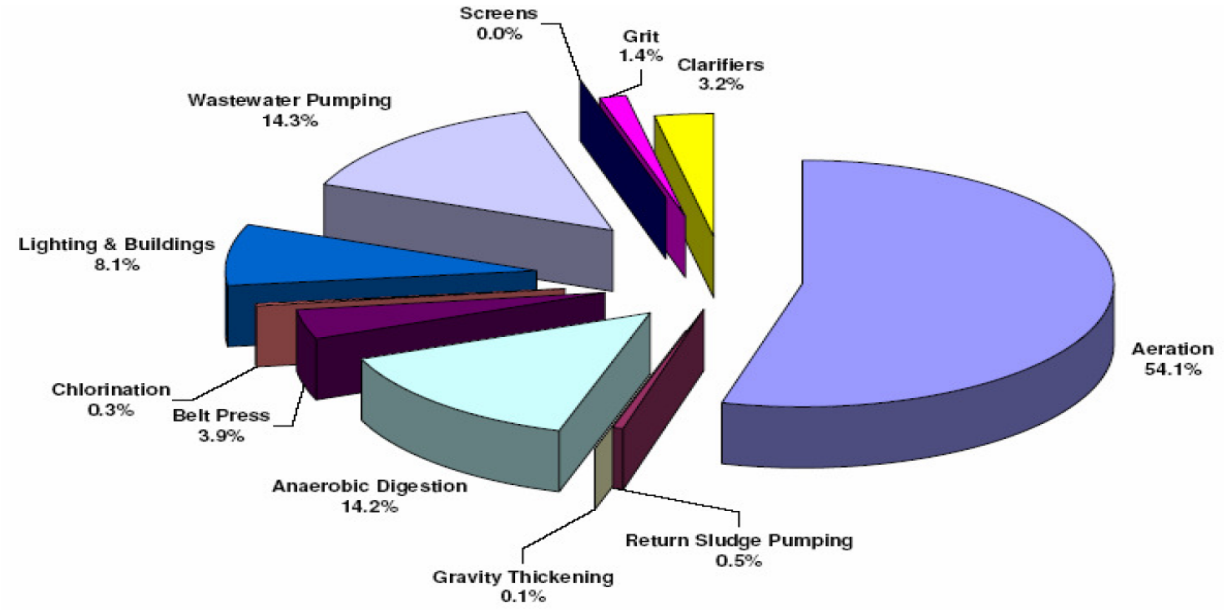
High Energy Use at Treatment Plants

Wastewater treatment plants can consume 50% or more of municipal electrical use



Electricity Requirements for Activated Sludge Wastewater

Derived from data from the Water Environment Energy Conservation Task Force *Energy Conservation in Wastewater Treatment*

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Aeration Systems

- Aeration uses 30-70% of total energy at a treatment plant
- Some treatment plants use manual (or no) controls and don't closely monitor dissolved oxygen levels (O_2)
- **Solution:** Install automated controls -- include a sensor to detect O_2 levels
  - ❑ Achieve up to 50% savings – payback of less than one year in many cases

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Pumping

- Pumping used to move raw sewage from collection system to treatment plant
- Pumps are oversized at many facilities
  - ❑ Sized for maximum flow that occurs 1% of the time
- Solution: Install two pumps – one more normal activity and another to kick-in when flow is high
  - Can achieve 25% electrical savings

Lifecycle Cost Analysis

- Many facilities are 30-40 years old and due for major facility upgrade
- Consider lifecycle cost analysis when making decisions about plant upgrades
  - Life cycle costs are the total capital and operational costs for the facility over its useful life

Transportation Efficiency

Municipal Operations

- Municipal Fleet
- School Operations
- Employee Transportation Programs
- Traffic Control Devices
- Route Optimization

Supporting Infrastructure

- Pedestrian / Bicycle Facilities
- Public Transportation
- Park and Ride Lots
- Electric and Natural Gas Vehicle Fueling Stations