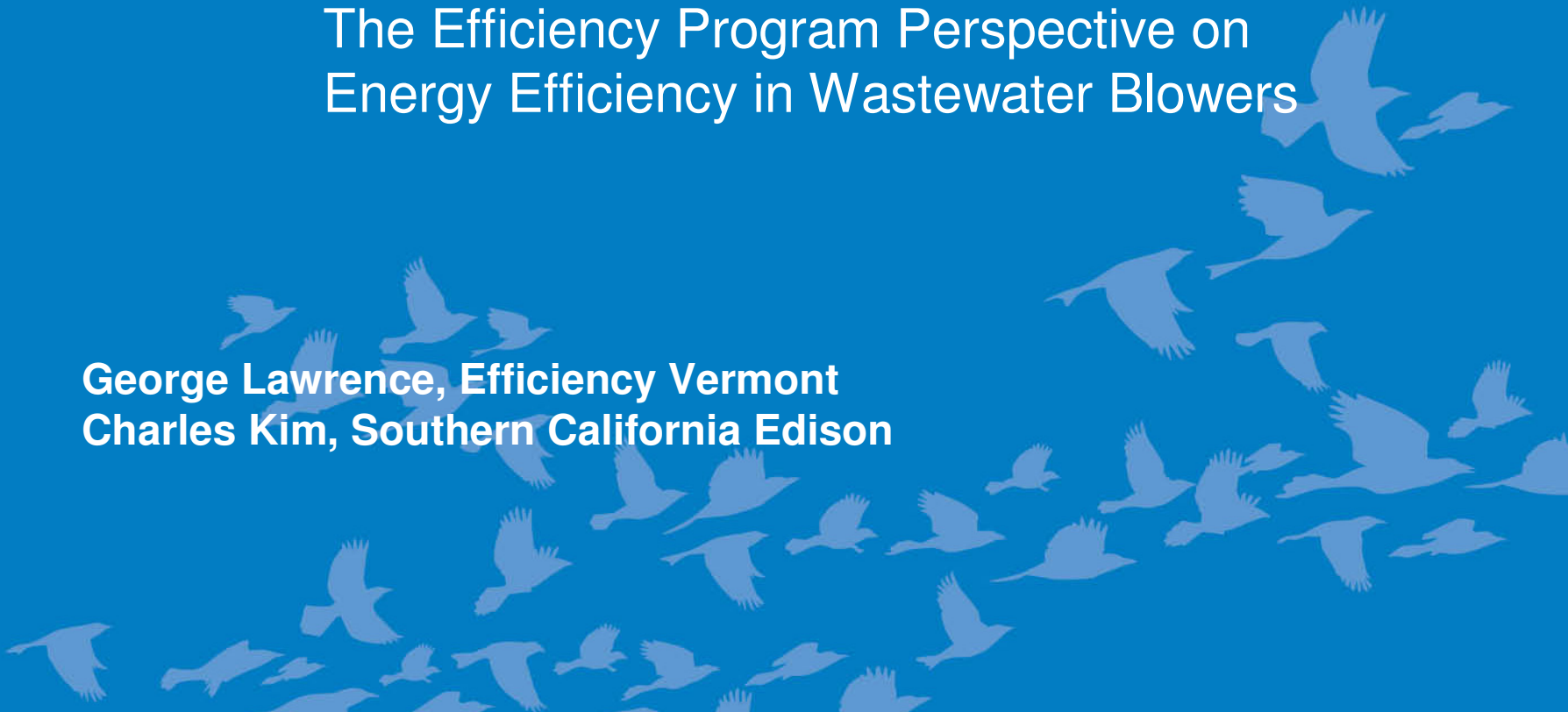




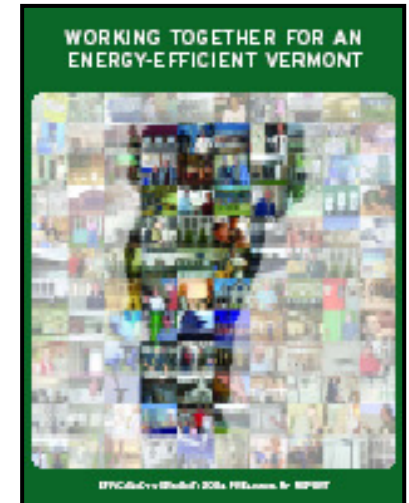
# Consortium for Energy Efficiency

## The Efficiency Program Perspective on Energy Efficiency in Wastewater Blowers

**George Lawrence, Efficiency Vermont**  
**Charles Kim, Southern California Edison**



# What Is Efficiency Vermont ?



The first energy efficiency utility in the USA

Created by order of the Vermont State Legislature in 2000

An innovative approach to help Vermonters save energy and protect the environment

VEIC holds the Efficiency Vermont contract

Two divisions: Business and Residential Services

## Efficiency In Context – Why?

### Energy

Cost from Hydro Quebec or VT Yankee: \$0.05 to 0.07 / kWh

Cost on the New England open market: \$0.107 / kWh

Cost of Efficiency: \$0.026 / kWh

### Demand

Efficiency Vermont annual budget: \$31 Million

Cost of a recent new transmission line: \$300 Million



# Efficiency Vermont's Water & Wastewater Market Initiative

**Purpose:** To understand the water and wastewater market and to increase electrical efficiency within it.

**Focus:**

- municipal and private
- water and wastewater
- facilities and pump stations
- new construction, renovation, equipment replacement, and new processes and technologies

# Custom Track Process – Blower Example

Step 1- Calculate or meter existing or baseline condition (energy in kWh and demand in kW)

If existing blower: runs cont. at fixed speed? Variable speed?  
Multiple blowers?

Evaluate on a equivalent cf basis? Or hp? Or run time?

Step 2 – Calculate or meter proposed new blower condition

Step 3 – Baseline (kWh and kW) - Proposed (kWh and kW) = Savings

Step 4 – Offer incentive and cross your fingers

Step 5 – Haggle with customer and argue with design engineer

Step 5 – Defend savings claims at verification time

# Efficiency Vermont's Water & Wastewater Market Initiative

## Vermont Market

### Municipal Wastewater

- ◆ 90 Plants
- ◆ 76% of plants have average daily flows less than 1 MGD
- ◆ 71% of facilities in VT are Aerated Lagoons or small Activated Sludge



# Efficiency Vermont Project History '00-'07 in the Water and Wastewater Market

	# of Projects	% of Savings	% of Incentive	% of Cust. Cost
Lighting	80%	1%	3%	0.3%
Motors	10%	8%	8%	7%
VFDs	9%	65%	57%	25%
Process	0.3%	23%	25%	55%

The majority of VFDs installed are on aeration blowers

Process projects included: clarifier, UV system, sludge dewatering, and methane cogen



## Blower Evaluation Efforts in Vermont

Tested a Neuros vs. a PD at Essex Junction – HSi ordered

Testing a K-Turbo vs. a centrifugal at Burlington North Plant

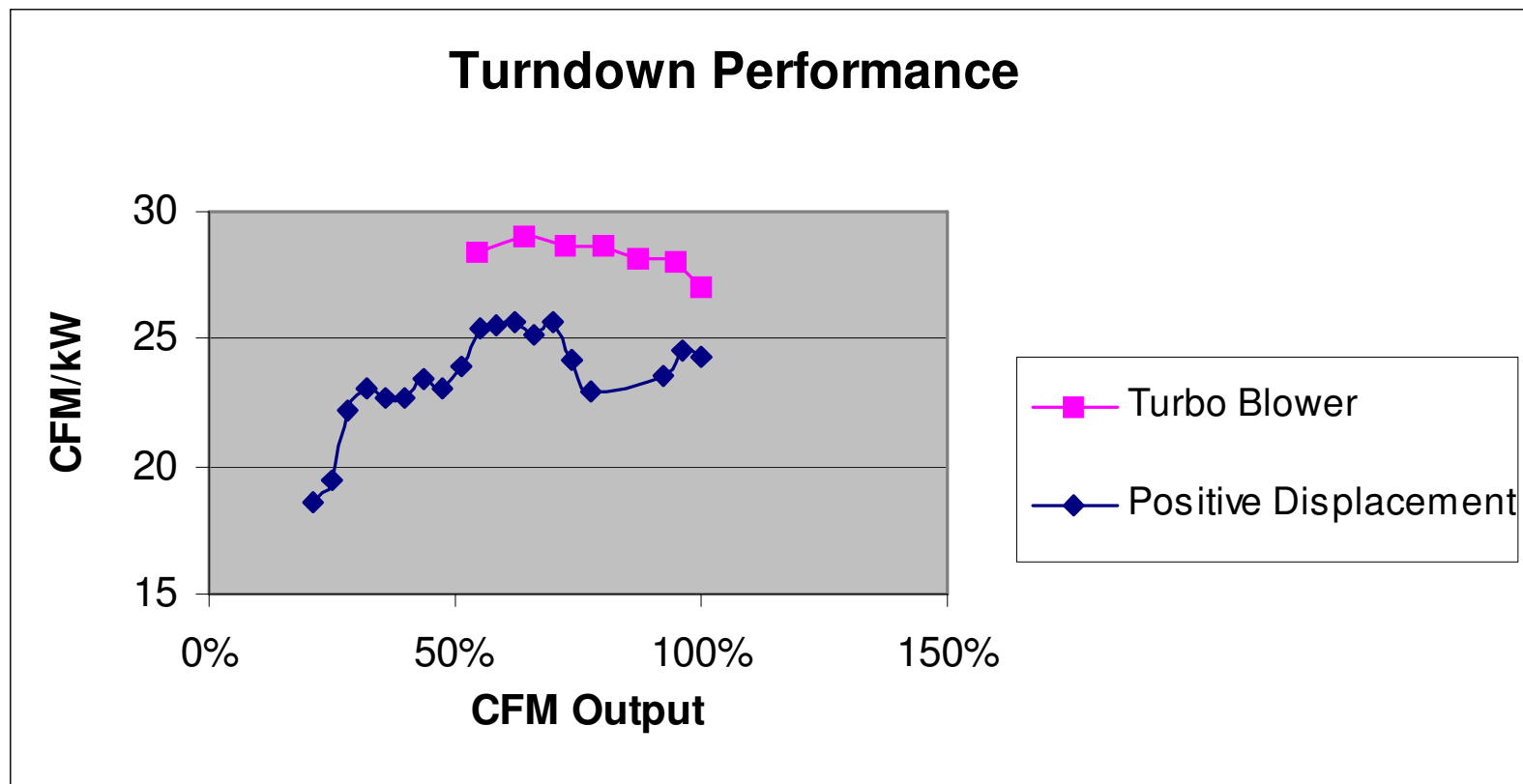
Five other plants have expressed interest in turbos

Green Mountain Water Environment Association (GMWEA)

- Conference Nov 5- Presentation by EVT and BED

Submitted an Abstract to the NEWEA for presentation on Jan 24-27

## Testing results so far: 12 to 25% savings vs. PD



# WWTP Market Potential in Southern California

- ~ 400 WWTPs in SCE Service Area
- ~ 215 WWTPs have the secondary treatment process
  - About 115,000 kW Peak Demand
  - About 530,000,000 kWh per Year
- Energy Efficiency Opportunities
  - New Components (e.g. Turbo Blower)
  - Plant Operation Optimization

# Need for Nationwide Collaboration

- Enhance M&E Practices
  - Standardized measurements practices
    - Identify key variables
    - Identify key operating conditions
- Share System and Operation Knowledge
  - Increase sample size
  - Make studies available to other utilities
- Further collaborations with CEE and EPRI

# Need for Energy Performance Standard

- Our Focus: Promote Energy Efficient Product / System
  - Key Considerations:
    - Component vs. System
    - Energy Efficiency
    - Market Potential
    - CBA
    - Reliability / Maintenance
    - Etc.

## Blower

Common variables applicable to all blower applications regardless their designs

WWTP

Specific Variables

Application1

Specific Variables