

# OPTIMIZING ENERGY EFFICIENCY THROUGH BUILDING COMMISSIONING

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INVESTING IN SOLUTIONS THAT ADDRESS CLIMATE CHANGE AND ENERGY SECURITY

# I'M HERE TO DISCUSS

- **Optimizing Energy Efficiency Through Commissioning**  
Policies & Practices
- **U. S. Incentives & Mandates for Bldg. Optimization**
- **Texas A&M Experience with Bldg. Optimization**



# What's After Codes & Financing?

- ◆ You have the latest building energy codes
- ◆ You have special energy financing in place
- ◆ You have done most cost-effective retrofits
- ◆ You still have need/mandates to save more energy

*Then you should look at aggressive commissioning programs!*

# Building Optimization Defined

- ◆ **Numerous Terms:** Commissioning, enhanced commissioning, retrocommissioning, recommissioning, building tune-up, etc.
- ◆ **Building (new) Commissioning:** Process of insuring new HVAC systems perform to design intent, i.e. works
- ◆ **Re/retrocommissioning (existing):** Process of minimizing energy use while maintaining occupant comfort
- ◆ **Enhanced Commissioning:** Term used by US Green Building Council to document and test new HVAC systems

# TOP 10 OPTIMIZATION (RETROCOMMISSIONING) ITEMS

- ◆ Maximize free cooling
- ◆ Reduce scheduling times
- ◆ Use of variable speed drives
- ◆ Simultaneous heating/cooling
- ◆ Excess outside air
- ◆ Sensor calibration
- ◆ Dry bulb vs. wet bulb
- ◆ Excess pumping pressure
- ◆ Deferred maintenance
- ◆ BAS control sequences

# OPTIMIZING BUILDING EFFICIENCY

## *Texas A&M Univ. Experience*

- ◆ **TAMU Campus Experience** - Reduced EUI 34 % since 1993 and no energy increase with 4 mil. Ft<sup>2</sup> added
- ◆ **Low Hanging Fruit** - Avg. 1.6 yr payback & 15 to 20 % savings
- ◆ **Building Size** - >50,000 ft<sup>2</sup>, operational automation system
- ◆ **Clientele** – Hospitals, schools, central power plants, data centers, office buildings, airports, and manufacturing
- ◆ **TAMU Technology Developer** - Commissioned 500 buildings since 1993
- ◆ **Continuous Commissioning** – Licensed, patented process

# LOW-ENERGY BUILDINGS 20% CHEAPER WITH OPTIMIZATION

- **Existing Buildings** – 20% less to operate
- **New Construction** – Prevent over sizing of equipment saving up to 20 %
- **Low-Energy Buildings** – Reduce capital requirements for on-site energy supplies
- **Reduced O&M** - Continuous Commissioning reduces O&M through improved maintenance

# U. S. INCENTIVES & MANDATES FOR BUILDING OPTIMIZATION

## ◆ **Mandates**

- All federal buildings in U. S. must receive optimization assessment every 4 yrs.
- Pending climate change legislation lays out guidelines for credits from commissioning

## ◆ **Incentives** – Several utilities and states offer cash incentives [CA, NY, & Texas]

# MARKET TRANSFORMATION NEEDS

**Specialized training for  
engineers & technicians**

**Utility incentives increase  
participation & awareness**

**Voluntary standards  
[LEEDs]**

**Govt. “Leading by Example”  
in Federal Buildings**

# TAKE AWAYS

- **Key Clean Energy Policy Tool - Very low-hanging fruit**
- **Never Get to Net Zero Buildings Without**
- **Optimization needs to be continuous**
- **Needs Market Transformation -- Training, cash incentives, voluntary standards [LEEDs], and govt. “Leading by Example”**





# Thank You!



## Questions/Comments?

### Malcolm Verdict