Balancing Energy Efficiency & Renewable Energy Policy

Tuesday
3:45 pm
Panelists

- Bruce Mast, Build It Green
- Mark Dhennin, Cummins
- Bakari Kennedy, Suncoast Credit Union
- David Cohan, DOE
Bruce Mast

Build It Green
About Build It Green

Build It Green’s Mission is to help professionals adopt green practices and grow the market for efficient, healthy homes.

BuildItGreen.org
CA’s Energy Goals Have Shifted
Focus on Least Cost Puts Emphasis on EE

- Clean fossil fuel generation
- Distributed Energy Generation & Renewables
- Energy Efficiency & Demand Response

California’s Loading Order
Focus on Climate Change Requires “All of the Above”

90% Reduction Needed
Eliminate nearly 2 lbs GHG for every 1 lb emitted in 1990

Source: Dr. Jane Long, California’s Energy Future - the view to 2050, July 2011
Wanted: Alignment Between Goals and Policies
RPS Changes Role of EE

Duck Curve Threatens Future Progress

Typical Spring Day

- Actual 3 hour ramp 10,892 MW on February 1, 2016
- Ramp need ~13,000 MW in three hours
- Over generation risk
- Net Load 11,653 MW on May 18, 2016

From EE to DER
Solution: DER Procurement

Efficiency Programs
- Paid on prediction in advance
- Engineering models or deemed savings
- Regulation and program rules

Pay-for-Performance
- Metered EE capacity (location + time + volume)
- Paid on performance when delivered
- Procurement of EE as capacity

Courtesy of Open Energy Efficiency
Questions?

Bruce Mast | Deputy Executive Director
Bruce@builditgreen.org | (510) 590-3360 ext. 111

www.builditgreen.org
Cummins, Inc.
2016 Revenue: $17.5 billion
55,000 employees, 190+ countries & territories

- Engines
- Power Systems
- Components
- Distribution
Environmental Recognition

MEMBER OF
Dow Jones Sustainability Indices
In Collaboration with RobecoSAM

Corporate Responsibility Prime
rated by ekom research

ROBERT W. CAMPBELL AWARD.

Better Plants CHALLENGE
U.S. DEPARTMENT OF ENERGY

Energy Management Award of Excellence

DECOPUING LEADER 2014
Cummins Can Make a Difference

Fueled by 55,000 employees and meaningful public policy and stakeholder engagement.
Envolve Cummins Priorities

**FOCUS**

- Reducing our carbon footprint.
- Using fewer natural resources.
- Partnering to solve complex problems.

**ACTION AREAS**

- New product fuel efficiency • facility GHG reduction • renewable energy • products in-use fuel efficiency • logistics • remanufacturing
- Water reduction and neutrality • increased recycling • zero disposal • materials efficiency • packaging • advanced manufacturing
- Customers • communities • suppliers • governments • NGOs • industry groups • universities
Energy footprint & goal

Global footprint – 2016

- 919,000,000 kWh electricity
- $150 million total energy spend
- 12,500,000 gallons diesel fuel
- 1,490,000,000 cubic feet natural gas
- 770,000 metric tons CO₂e emissions

Reduce GHG emissions through:

- Energy efficiency
- Renewable energy
Energy efficiency

**2020 Plan**
- Training & tools
- ISO 50001 & SEP
- Low cost/no cost improvements
- Capital investment ($12M/year)

**Capital investment criteria**
- >11% IRR, and
- <$1000/ton CO$_2$e, or
- Strategic value

**Declining rate of return**
- 2016: 33% IRR
- 2020: 22% IRR (projected)

*IRR = internal rate of return*
# Renewable energy

## 2020 Plan
- Onsite owned
- Onsite PPAs
- Offsite virtual PPAs
- Capital investment ($2.5M/year)

## Guiding Principles
- Additional
- Tangible
- Cost effective
- Transparent

## Increasing rate of return
- 2017: 10% IRR
- 2020: ???

PPA = power purchase agreement
Cummins has 11 on-site solar arrays with a total output of 6.5 MW – that is enough to power about 1000 homes. Cummins plans to double output from on-site renewable sources by 2020.
Projected GHG intensity benefits

Virtual PPA plan:
- 75 MW wind
- 270,000 MWh/yr
- 186,000 MTCO$_2$e/yr
Hillsborough Ave Call Center 408 kW
Branch Investment Performance

2013@ $2.50/W
2017@ $1.80/W

Solar Electric (PV) System: 40.8 kW DC
Producing 53,902 kWh/Year

Cashflow Payback: 11 years
Internal Rate of Return (IRR): 9.2%
Modified IRR (MIRR): 8.5%
Cash Gained over System Life: $162,055
CO2 Saved over System Life: 1,105 tons
Suncoast Solar-Powered Branches

1. Bushnell Service Center**
2. Zephyrhills Service Center
3. Riverview Service Center**
4. Wauchula Service Center**
5. Immokalee Service Center
6. East Fort Myers Service Center
7. South Naples Service Center
8. Pine Ridge Service Center**
9. Naples Horseshoe
10. Brooksville
11. Riverdale Service Center

** Net Zero Buildings
## Duke Energy Statement of Electric Service

**May 2016**

### Suncoast Credit Union
- **Address:** PO Box 11904, Tampa, FL 33686
- **Next Read Date On or About:** May 31 2016

### Duke Energy Florida

#### Meter Readings

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### Payment Information

- **Your Payment for this Statement Will be Electronically Processed for $11.89 on 05/24/16**
- **Payments Received As of APR 21 2016:** 180.58 Thank you

### Energy Use

- **Daily Avg. Use:** 0 KWh/day
- **Use One Year Ago:** 0 KWh/day
- **Average Electric Cost:** $0.39

Duke Energy Florida utilized fuel in the following proportions to generate your power: Coal 22%, Purchased Power 17%, Gas 61%, Oil 0%, Nuclear 0% (for prior 12 months ending March 31, 2016).
10,000 SF Service Center  7,000 SF Training Center
BOTH PROPERTIES:

LG340W panels = 292 count

Canadian Solar270W panels = 404 count

Total panels 696 count

Total WATTS 208,360

Est Annual production:

Training Center: 82,939 kWh/yr

Member Center: 102,132 kWh/yr

Pond: 104,973 kWh/yr

Total Production estimated annual: **292,883 kWh/yr.**
MCC 400 kW Solar Array

1178 rooftop solar panels are designed to have an Average Daily Output of 1849 kWh, providing 674,999 kWh of energy annually. This will save Suncoast Credit Union an estimated $70,000 a year at current utility rates.
MCC 400 kW Solar Array
The MCC Solar panels provide the source of energy for the entire system. Each panel was manufactured completely in the United States by Solar World. The project was awarded to Tampa Bay Solar a veteran owned alternative clean energy company composed of 80 percent former military, as well as 50% service disabled veterans.
Balancing Energy Investments

Without energy efficiency initiatives the Suncoast electrical use will exceed 64,885,000 kWh over the next 5 years. The energy efficient measures and solar projects will reduce the power requirements to 54,600,000 kWh over the next 5 years and result in a normalized reduction goal of 19.5 kWh/sqft; a 20% reduction.

Financially Suncoast saves over $300,000 annually through our current Green and Solar initiatives. Energy efficient initiatives are a triple bottom line success story for Suncoast – good for business, good for the community, and good for the environment.
HILLSBOUROUGH ADMIN BUILDING:

LG340W panels = 672 count Array 1
LG340W panels = 432 count Array 2
Inverters Qty(9) Solar Edge 33.3KW

Total Panel Area = 22,590 sqft
System Size: 375 kW DC
Annual Production: 524,671 kWh/Year
CS340W panels = 91 count Array 1
CS340W panels = 222 count Array 2
Inverters Qty(3) Solar Edge 33.3KW
Total Panel Area = 6,492 sqft
System Size: 106 kW DC
Annual Production: 148,477 kWh/Year
Contract Price $ 224,770
Pond System Investment Performance

2017@ $2.11/W

Solar Electric (PV) System: 106.4 kW DC
Producing 148,477 kWh/Year

Cashflow Payback: 12.7 years
Internal Rate of Return (IRR): 7.5%
Modified IRR (MIRR): 7.7%
Cash Gained over System Life: $346,153
CO2 Saved over System Life: 3,044 tons
Suncoast is Shaping the Conversation

Did you know Suncoast offers special discounted loan rates for purchasing an electric or hybrid vehicle? Save money on an electric car and at the gas pump, good to go! Learn more on our website: https://www.suncoastcreditunion.com/personal/.../vehicle-loans

Want to go green and get electronic statements from Suncoast? Sign up for SunNet and update your electronic document options. For every member who signs up for eStatements, Suncoast donates a dollar to the Arbor Day Foundation to plant a tree.

Check out our electric bill from Wauchula Service Center to see how much of a difference solar energy makes! Typically, the monthly electric bill for a branch this size would cost about $2,800. Suncoast is proud to have six different solar service centers.

DUKE ENERGY

STATEMENT OF ELECTRIC SERVICE
MAY 2016

ACCOUNT NUMBER

YOUR PAYMENT WILL BE ELECTRONICALLY PROCESSED 07-02-16

DUKE CREDIT UNION
PO BOX 1199
DUE DATE MAY 20, 2016
PAYMENT ADDRESS

CUSTOMER SERVICE OR PAYMENT LOCATIONS CALL: 1-888-338-4737
WEB SITE: www.duke-energy.com
TO REPORT A POWER OUTAGE:

READ METER READINGS
0-0

GENERAL SERVICE: NON REBATE
FEE: $1.00

RECEIVED

$11.89

ECU

WRITE A COMMENT...
2017 Better Building Summit
Balancing Energy Investments
Thank You

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