



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



Balancing Residential Energy Efficiency and Renewable Energy Policies in California

Better Buildings Summit, May 16, 2017



This presentation is funded by California utility customers and administered by Pacific Gas and Electric Company (PG&E) under the auspices of the California Public Utilities Commission.

About Build It Green

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

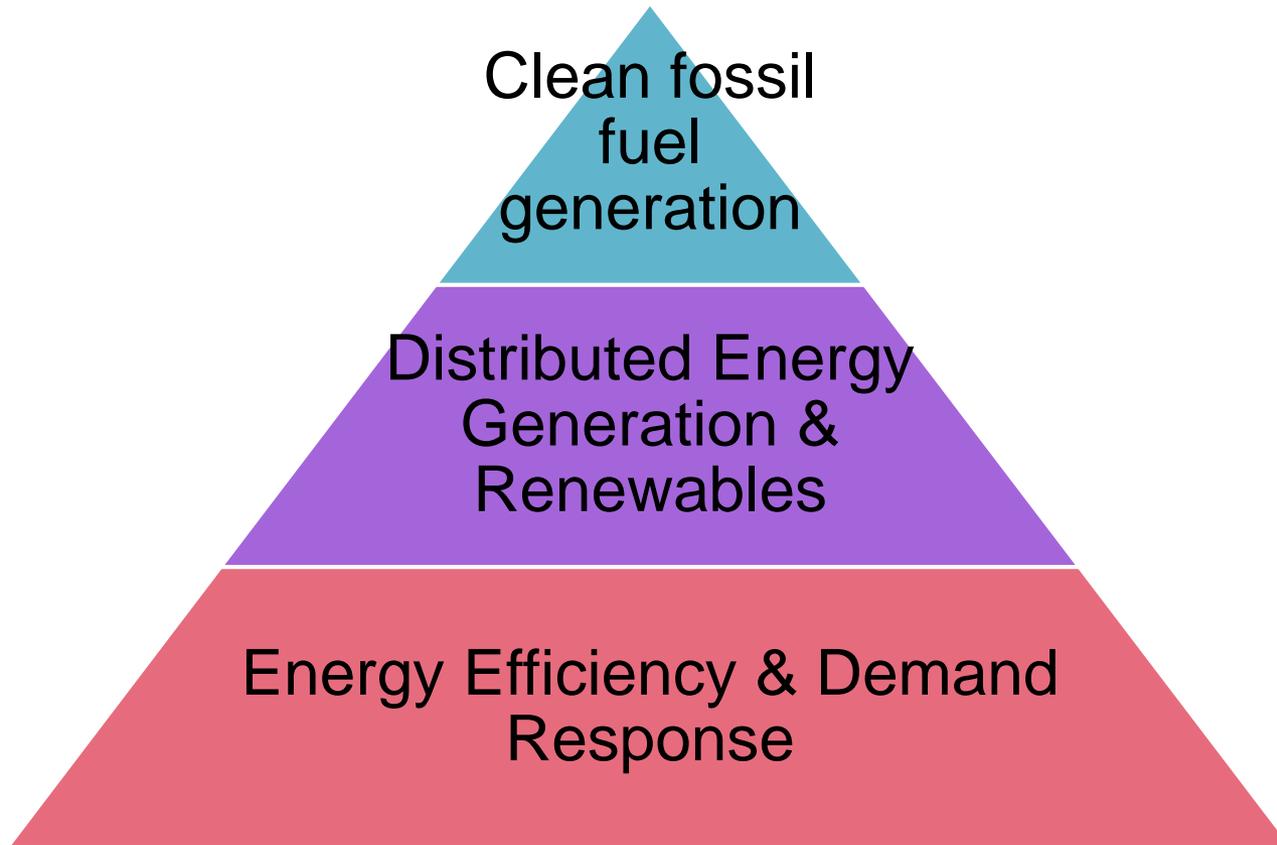
BuildItGreen.org



CA's Energy Goals Have Shifted

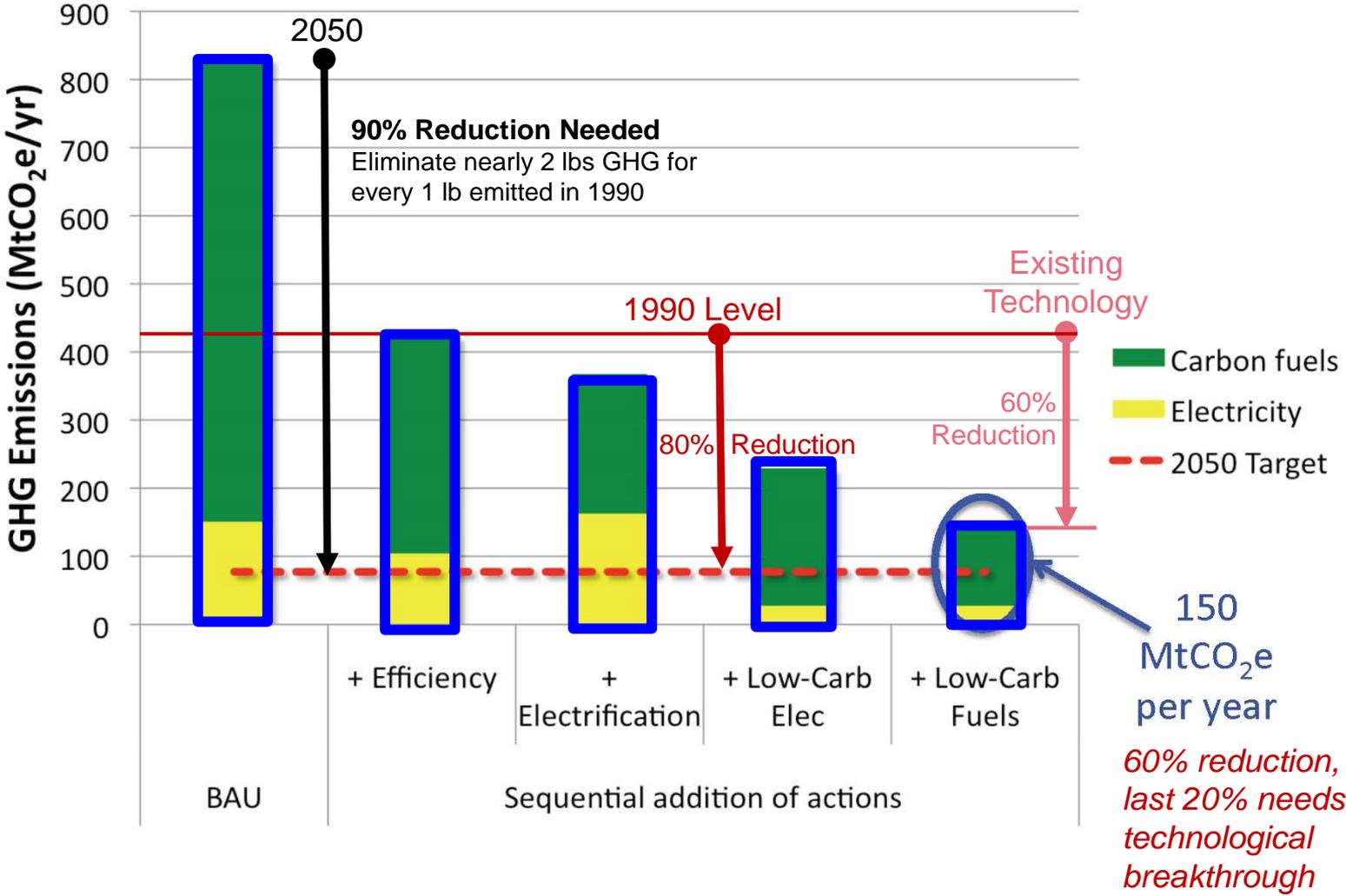


Focus on Least Cost Puts Emphasis on EE



California's Loading Order

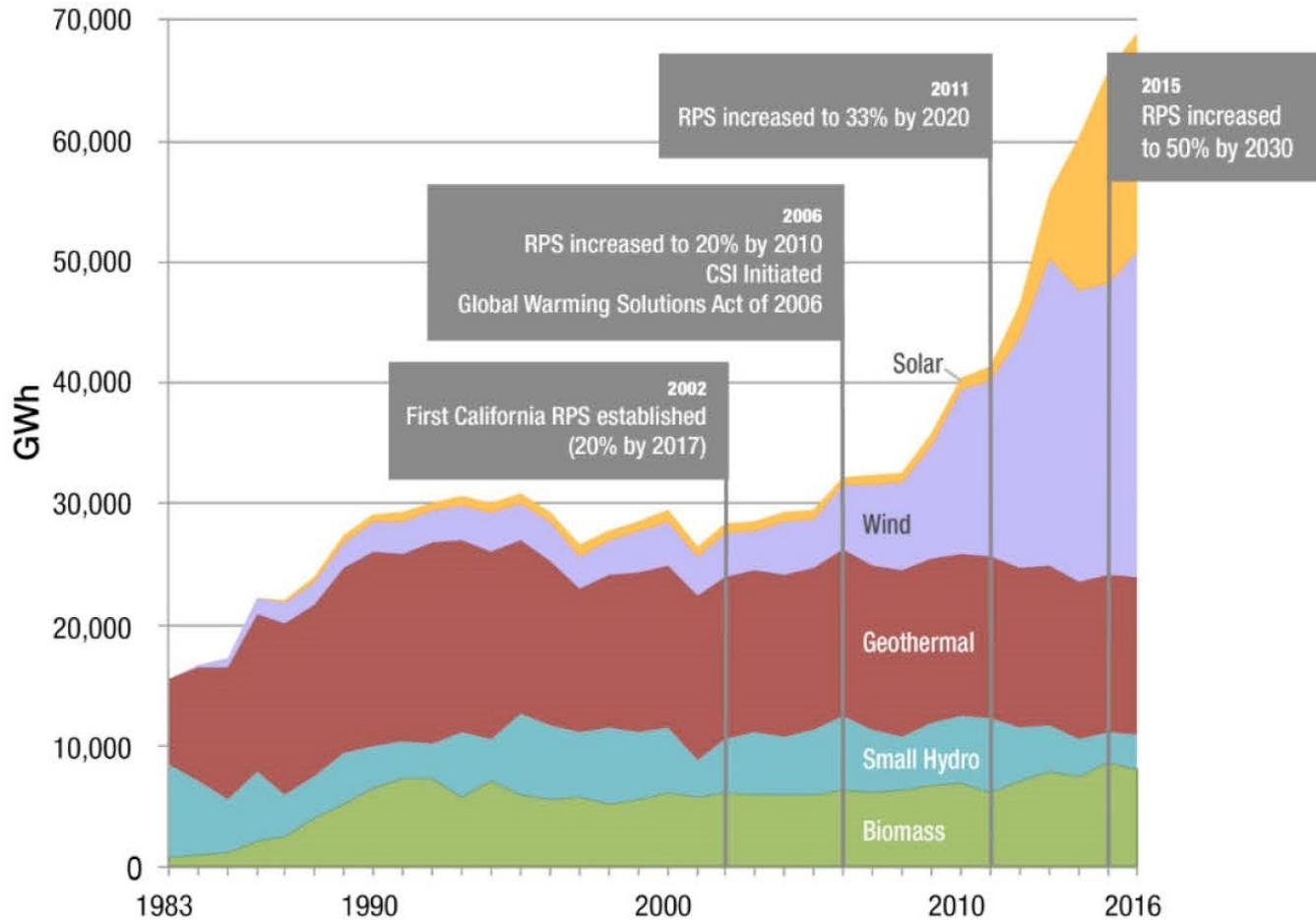
Focus on Climate Change Requires “All of the Above”



Wanted: Alignment Between Goals and Policies

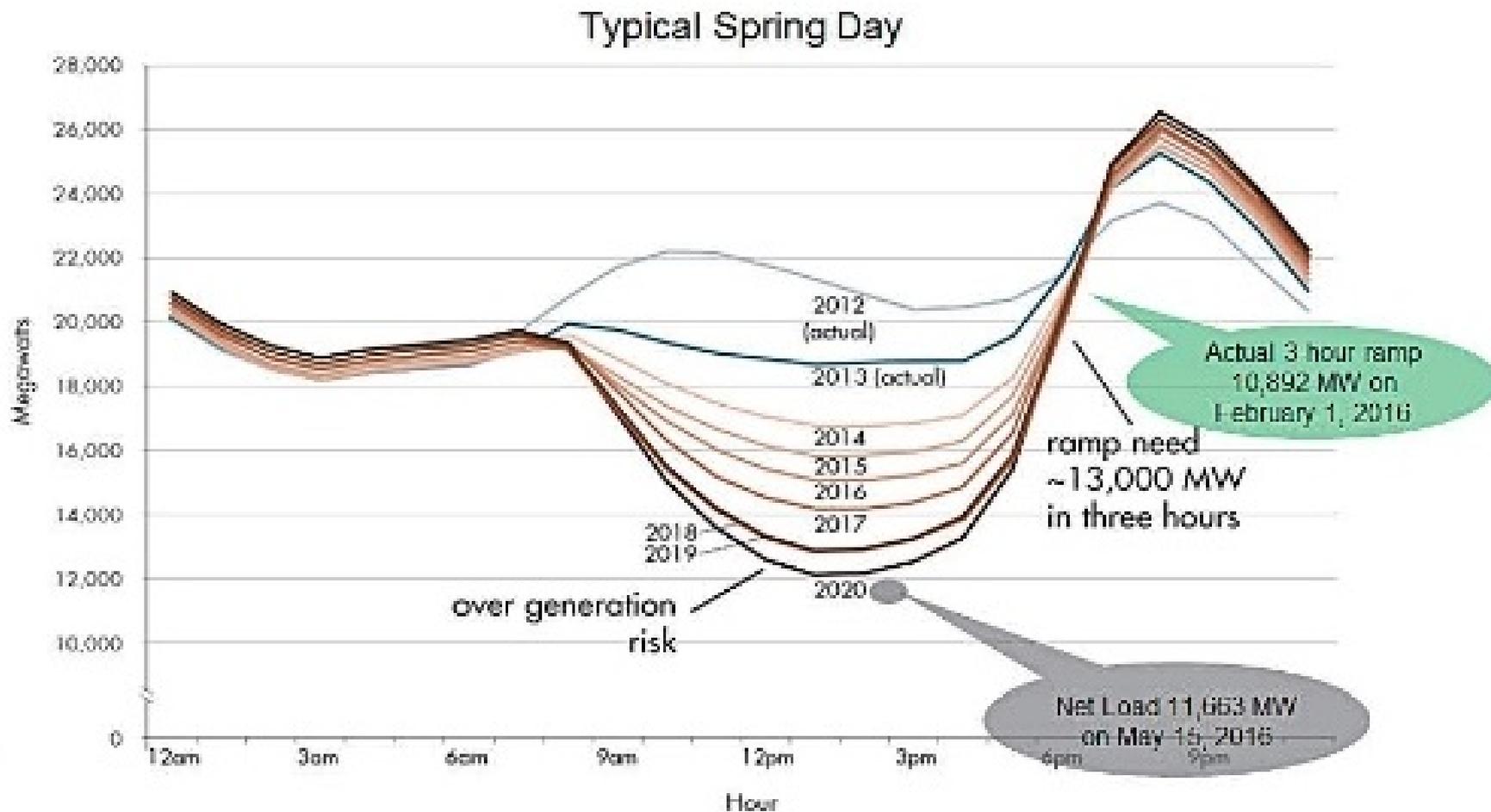


RPS Changes Role of EE



Source: California Energy Commission, Tracking Progress web page, Renewable Energy, updated December 22, 2016, and posted December 27, 2016.

Duck Curve Threatens Future Progress

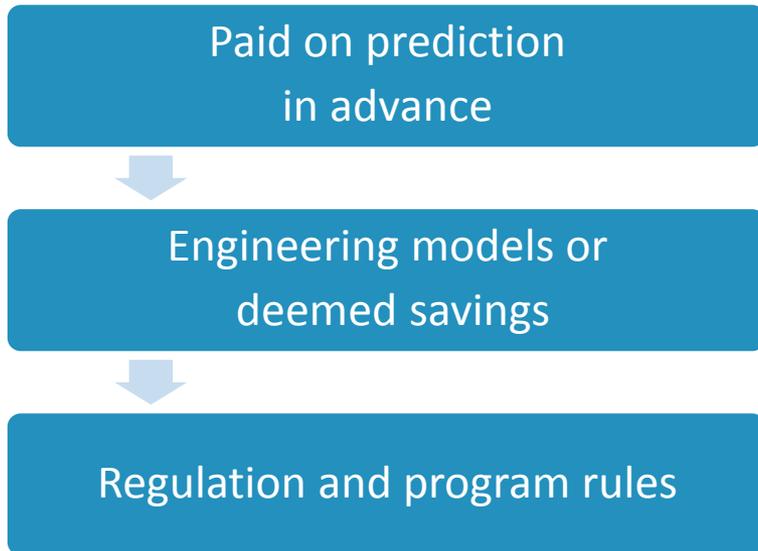


From EE to DER

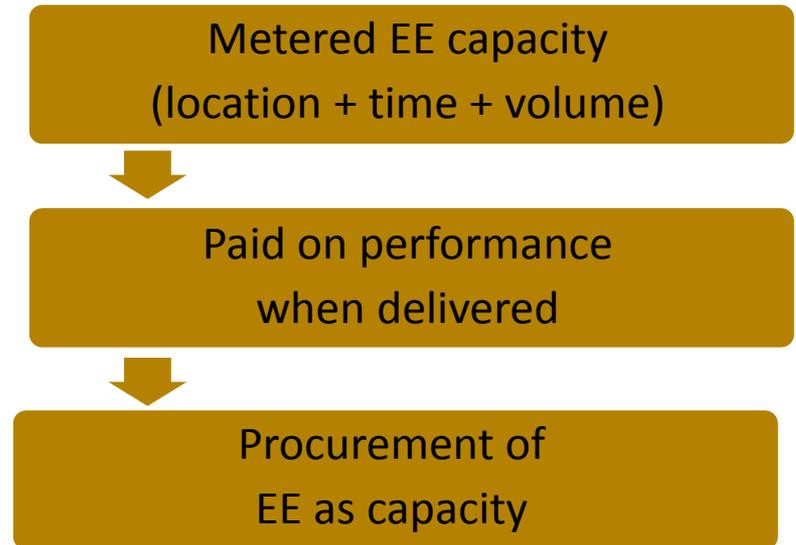


Solution: DER Procurement

Efficiency Programs



Pay-for-Performance





Questions?

Bruce Mast | Deputy Executive Director

Bruce@builditgreen.org | (510) 590-3360 ext. 111

www.builditgreen.org

Mark Dhennin

Cummins

Balancing Energy Efficiency & Renewable Energy

Mark Dhennin

May 16, 2017



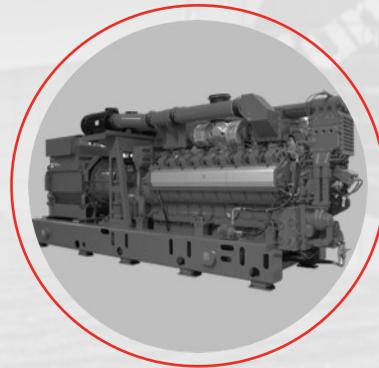
Cummins, Inc.

2016 Revenue: \$17.5 billion

55,000 employees, 190+ countries & territories



Engines



Power
Systems



Components



Distribution

Environmental Recognition

MEMBER OF

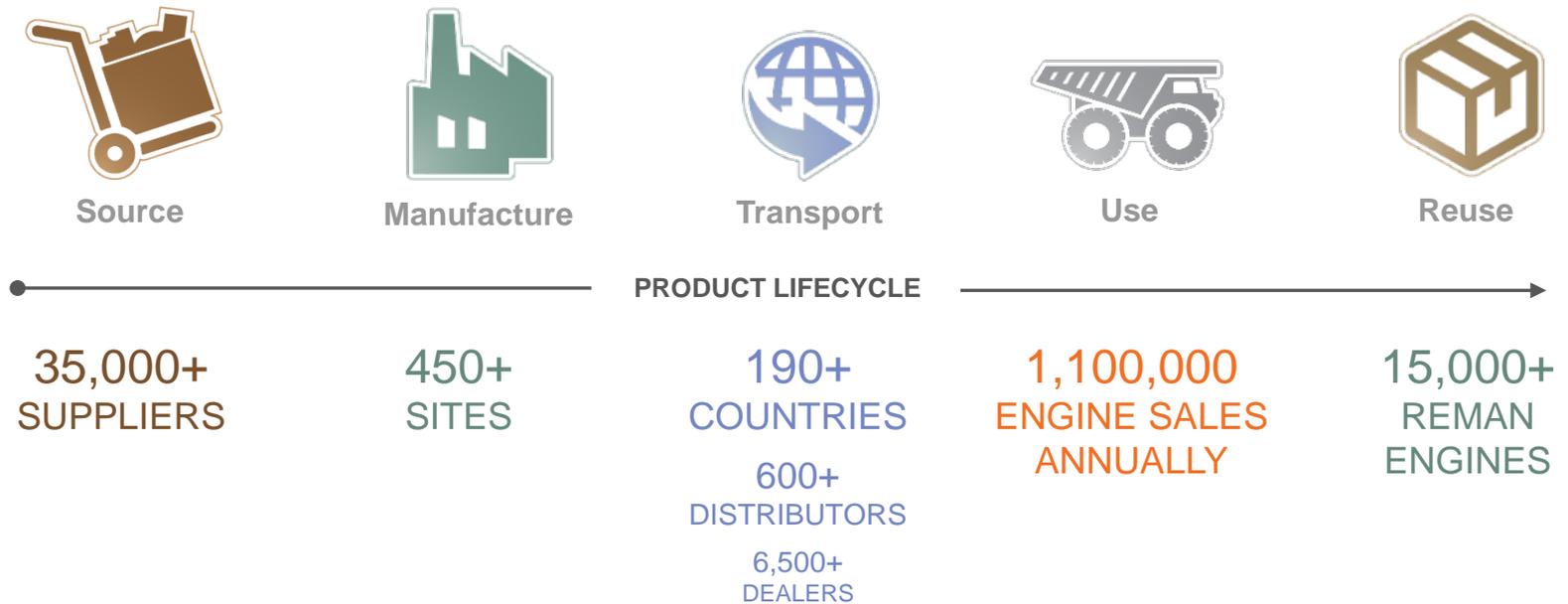
Dow Jones Sustainability Indices

In Collaboration with RobecoSAM





Cummins Can Make a Difference



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

Envolve Cummins Priorities **FOCUS**

ACTION AREAS

Reducing our carbon footprint.



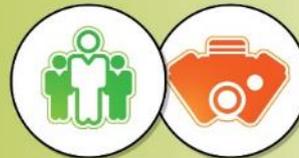
New product fuel efficiency • facility GHG reduction • renewable energy • products in-use fuel efficiency • logistics • remanufacturing

Using fewer natural resources.



Water reduction and neutrality • increased recycling • zero disposal • materials efficiency • packaging • advanced manufacturing

Partnering to solve complex problems.



Customers • communities • suppliers • governments • NGOs • industry groups • universities

Energy footprint & goal

Global footprint – 2016

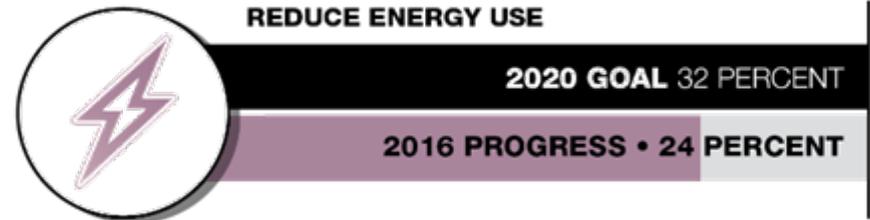
919,000,000
kWh electricity

12,500,000
gallons diesel fuel

1,490,000,000
cubic feet natural
gas

\$150 million
total energy
spend

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 CO₂e, 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 MTCO₂e/yr



Bakari Kennedy

Suncoast Credit Union



2017 Better Building Summit | Balancing Energy Investments



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**





STATEMENT OF ELECTRIC SERVICE



ACCOUNT NUMBER
[REDACTED]

MAY 2016

FOR CUSTOMER SERVICE OR
PAYMENT LOCATIONS CALL:
1-877-372-8477

WEB SITE: www.duke-energy.com

TO REPORT A POWER OUTAGE:
1-800-228-8485

SUNCOAST CREDIT UNION

PO BOX 11904
TAMPA FL 33680

SERVICE ADDRESS
1451 US HIGHWAY 17 N, NEW
WAUCHULA FL 33873

DUE DATE TOTAL AMOUNT DUE
MAY 24 2016 11.89

NEXT READ DEPOSIT AMOUNT
DATE ON OR ON ACCOUNT
ABOUT
MAY 31 2016 [REDACTED]

PIN: [REDACTED]

METER READINGS

METER NO. [REDACTED]
PRESENT (ACTUAL) 005918
PREVIOUS (ACTUAL) 003243
DIFFERENCE 002675
PRESENT ONPEAK 001455
PREVIOUS ONPEAK 001087
DIFFERENCE ONPEAK 000368
TOTAL KWH 2675
ON PEAK KWH 368
PRESENT KW (ACTUAL) 0014.70
PRESENT PEAK KW 0012.98
BASE KW 15
ON-PEAK KW 13
LOAD FACTOR 24.8%
CURRENT RECEIVED 007797

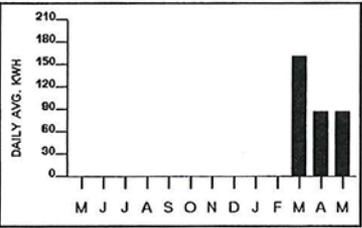
YOUR PAYMENT FOR THIS STATEMENT WILL BE ELECTRONICALLY PROCESSED
FOR \$11.89 ON 05/24/16
PAYMENTS RECEIVED AS OF APR 21 2016 180.58 THANK YOU

GS-1 060 GENERAL SERVICE - NON DEMAND SEC
BILLING PERIOD .03-29-16 TO 04-28-16 30 DAYS
CUSTOMER CHARGE 11.59

*TOTAL ELECTRIC COST 11.59
GROSS RECEIPTS TAX

TOTAL CURRENT BILL 11.89

TOTAL DUE THIS STATEMENT \$11.89



ENERGY USE
DAILY AVG. USE - 0 KWH/DAY
USE ONE YEAR AGO - 0 KWH/DAY
*DAILY AVG. ELECTRIC COST - \$.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).





RIVERDALE MEMBER SERVICE CENTER AND TRAINING CENTER

HOLMESHEPNER
Holmes Hepner & Associates Architects, Inc.
AA # 002817

10,000 SF Service Center

7,000 SF Training Center



Riverdale Service Center and 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:
292,883kWh/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



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.

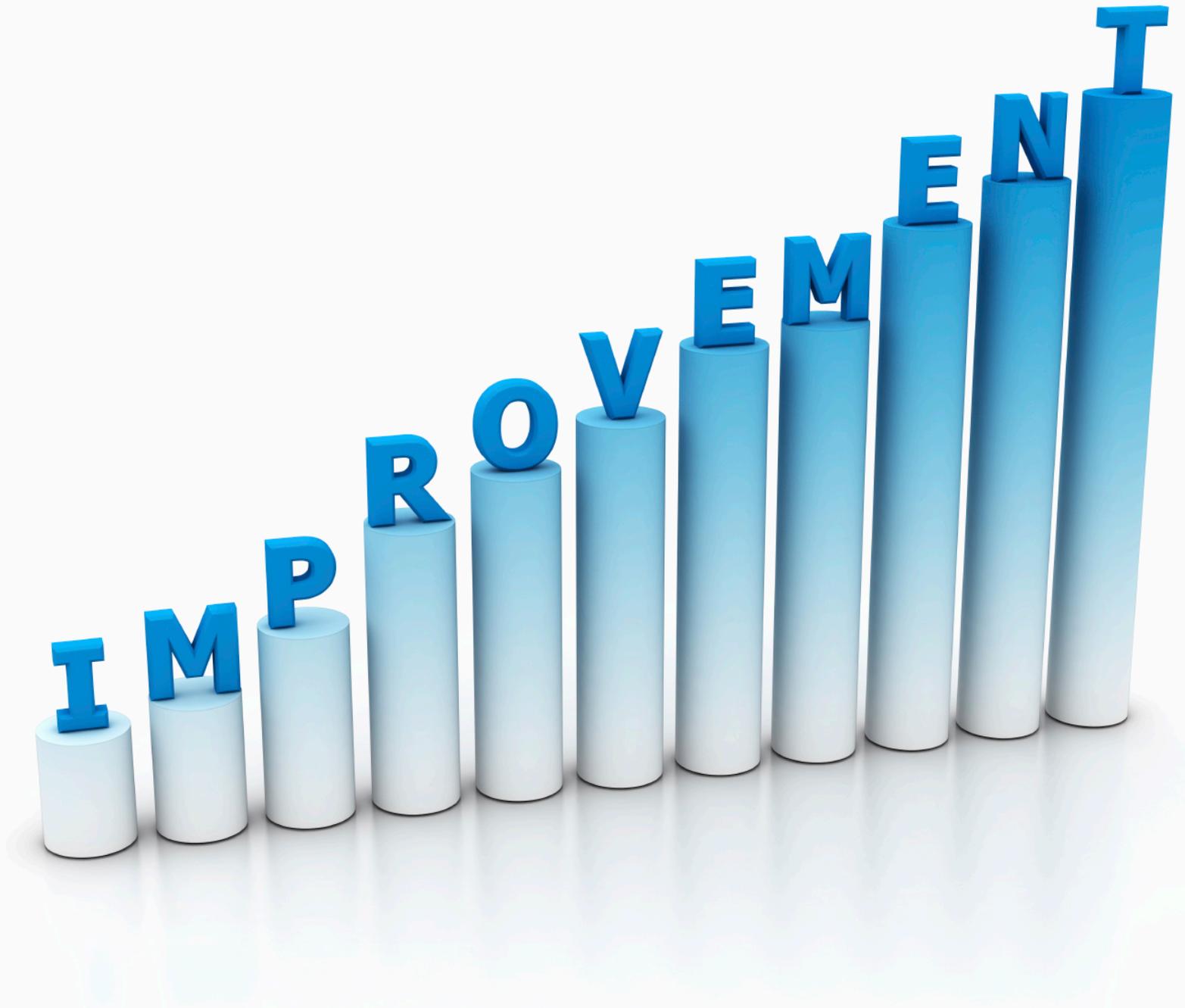


Balancing Energy Investments

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.







HILLSBOROUGH AVENUE OFFICE BUILDING
LOBBY

HOLMESHEPNER
Holmes Hepner & Associates Architects, Inc.
AA# 000817



HILLSBOUROUGH ADMIN BUILDING:

LG340W panels = 672 count Array 1

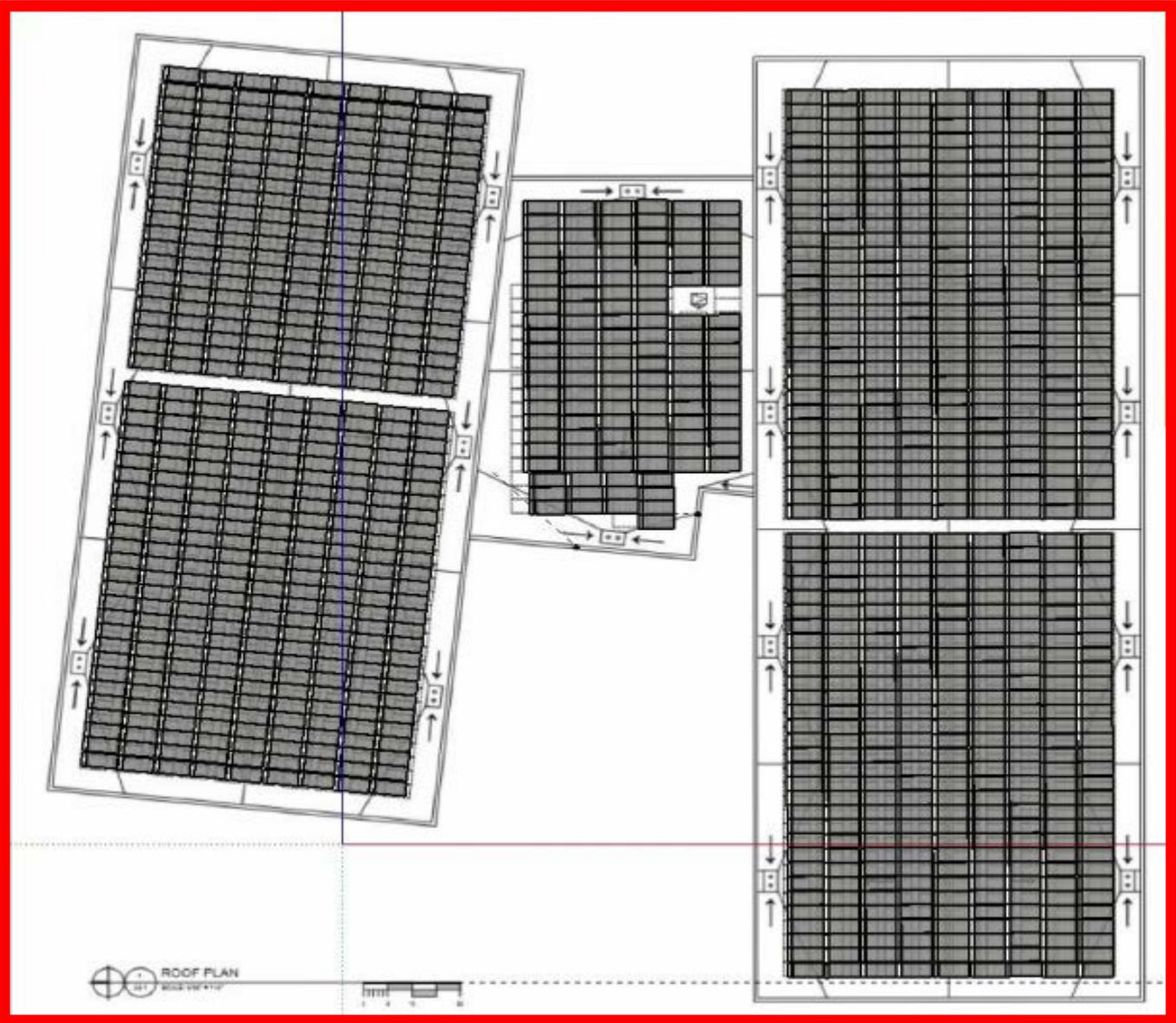
LG340W panels = 432 count Array 2

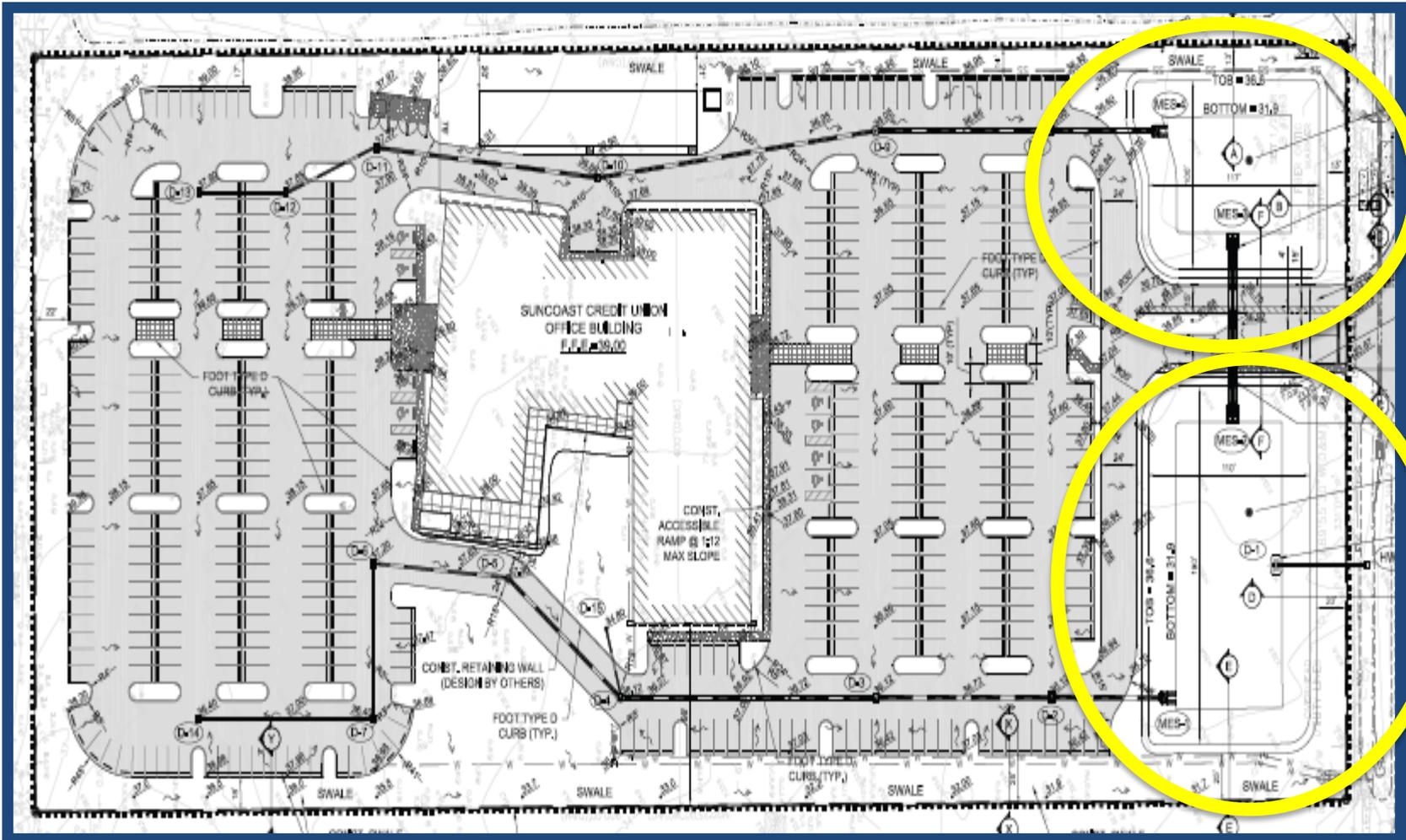
Inverters Qty(9) Solar Edge 33.3KW

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

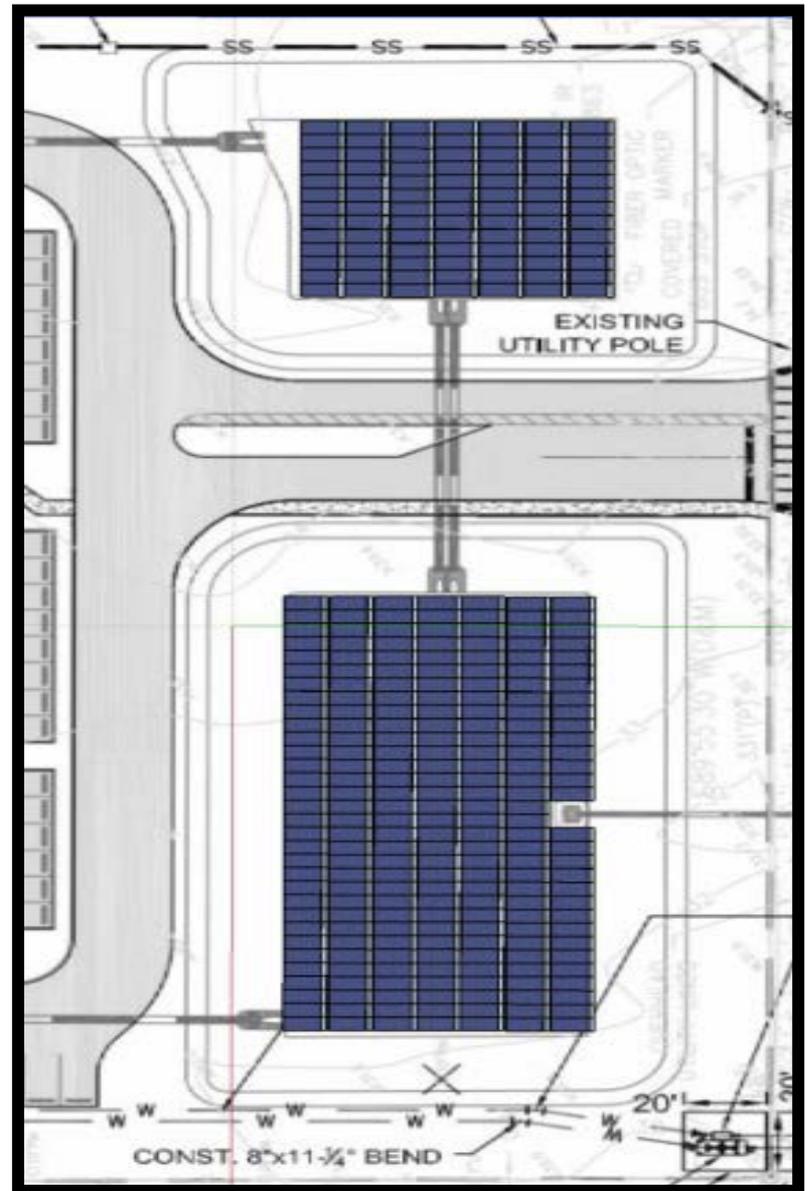
Inverters Qty(3) Solar Edge 33.3KW

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 pure "green" vehicle? Save money on an auto-loan and at the gas pump good to us! Learn more on our website: <https://www.suncoastcreditunion.com/personal/.../vehicle-loans>



Go Green & Save

Like Comment Share

Alaina Streblov, Carolina Tiuso and 242 others

15 shares

Write a comment...

Carolina Tiuso #GoGreen

Like Reply · September 30 at 2:42pm

Rita Pavone We have our accounts at Sun Coast.

Like Reply · September 28 at 6:53pm

Jan Sage Love sun coast!

Like Reply · September 28 at 4:34pm

Michelle Lee Fetzer Me too love them

Like Reply · September 28 at 9:16pm

George Kaye Green autos? Do you realize how much pollution it

to make those "green" cars?

Like Reply · September 29 at 12:53pm

Shakiya Bivins My vehicle is definitely not green! Haha

Like Reply · September 29 at 2:50pm

Suncoast Credit Union

September 20 at 10:00am

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



Like Comment Share

You, Janette McKay McElwain and 247 others

17 shares

Write a comment...

Vicki Ott Briggs It's great not to get extra papers, love it!

Unlike Reply · September 21 at 11:16am

Carol Brzezinski already signed up

Like Reply · September 20 at 11:40pm

Lexi Barkett Love Suncoast's involvement in helping the environm

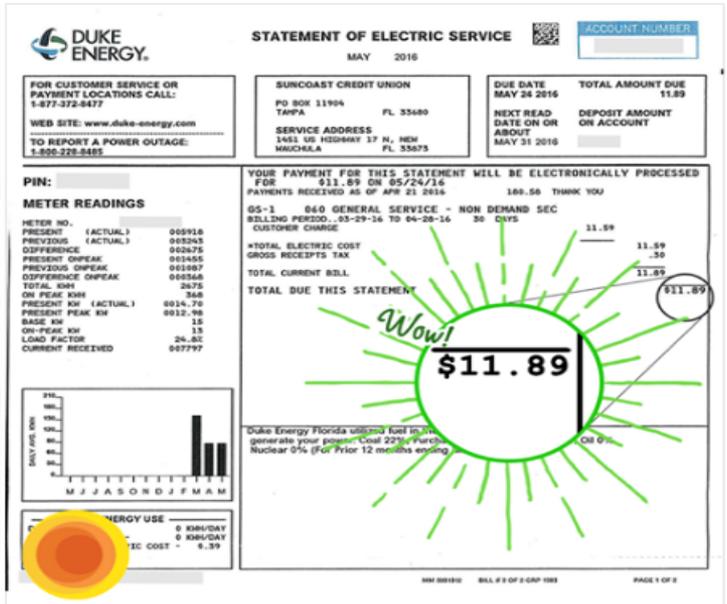
Like Reply · September 23 at 1:11pm

Write a comment...

Suncoast Credit Union

September 13 ·

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.



Love Comment Share

You, Venessa Baez, Alaina Streblov and 1.5K others

171 shares

Write a comment...

Ray Miller Now, just imagine if Florida homeowners were able to take advantage of a subsidized solar initiative to power our homes and sell excess energy back to the grid. It would be great, except, Florida lawmakers made a crooked deal with big energy.

Like Reply · September 13 at 12:53pm



2017 Better Building Summit Balancing Energy Investments



Thank You

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Download the app to your mobile device or go to bbsummit.pathable.com

