



Unlocking Solar's Bounty

How to prepare for large scale solar

American Planning Association Florida Chapter State Conference
September 13, 2018



GUNSTER
FLORIDA'S LAW FIRM FOR BUSINESS



CHANGING THE CURRENT. **FPL.**

Panel

- Josh Long, AICP, Gunster Law Firm
- Peter Cocotos, Esq., Florida Power & Light Company
- Jeff Conte, AICP, Florida Power & Light Company

American Planning Association Florida Chapter State Conference
September 13, 2018



GUNSTER
FLORIDA'S LAW FIRM FOR BUSINESS



CHANGING THE CURRENT. FPL.



Unlocking Solar's Bounty

How to prepare for large scale solar

American Planning Association Florida Chapter State Conference
September 13, 2018



GUNSTER
FLORIDA'S LAW FIRM FOR BUSINESS



CHANGING THE CURRENT. FPL.

67 Counties = Hundreds of Comp Plans and Zoning Codes



Session Outline

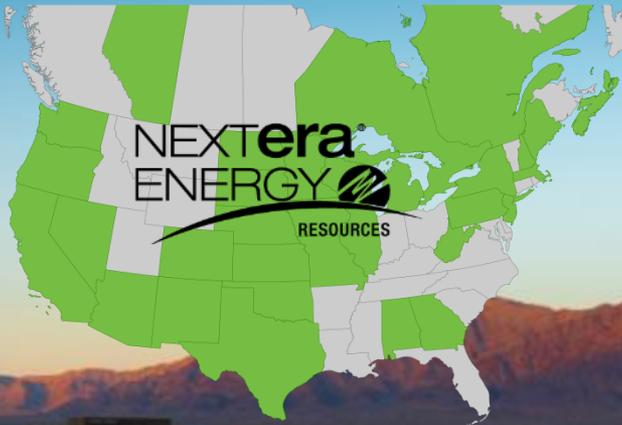
- I. FPL's Large Scale Solar Initiative
- II. Large Scale Solar (How it Works)
- III. Benefits of Local Large Scale Solar
- IV. Regulations (Comp Plan & Zoning Code)



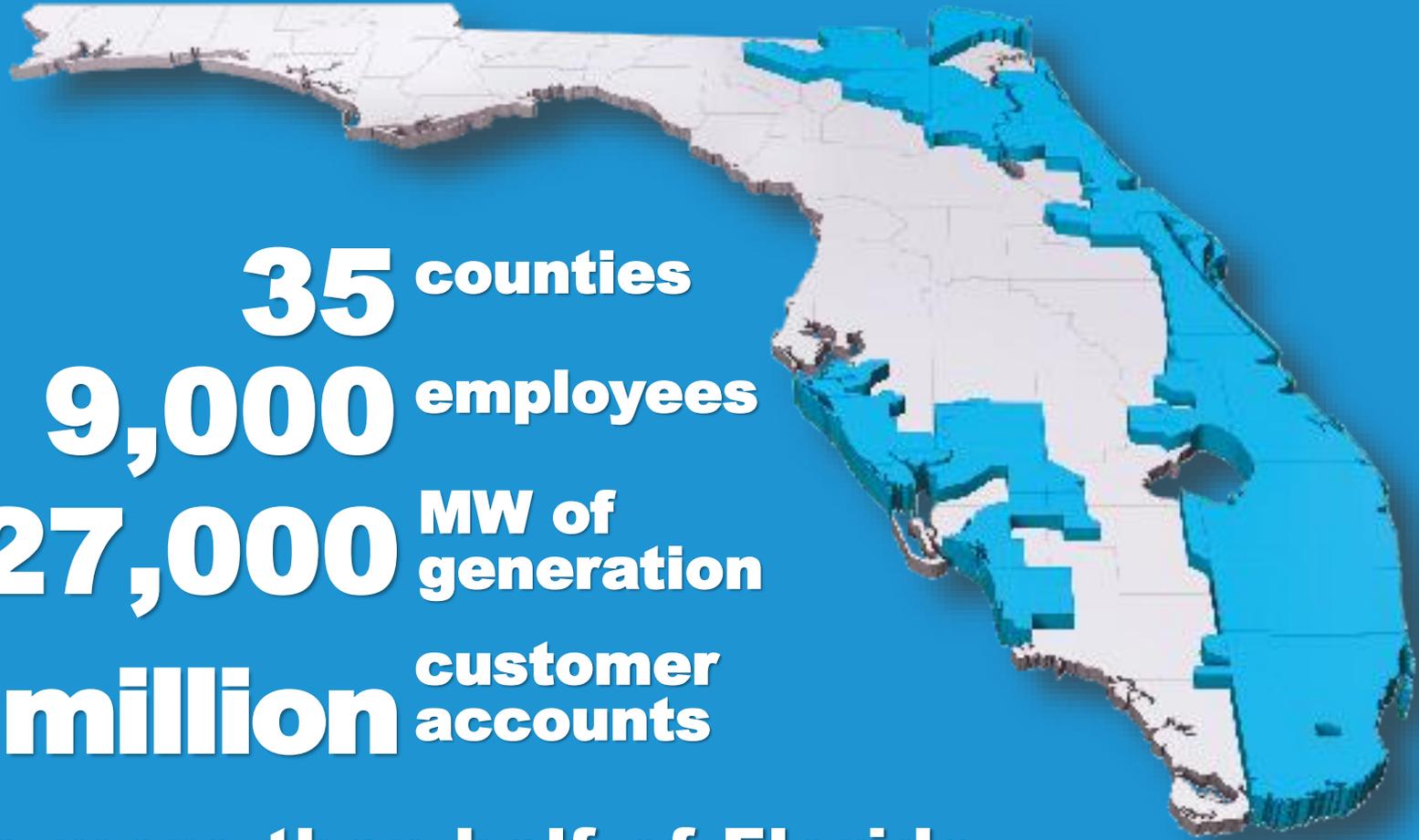
FPL's Large Scale Solar Initiative



NEXtera[®] ENERGY



- **World's #1 producer of renewable energy from the wind and sun**
- **Operating in 30 U.S. states & Canada, but Florida is our home**
- **Consistently ranks among Fortune's World's Most Admired Companies**



35 counties

9,000 employees

27,000 MW of generation

5 million customer accounts

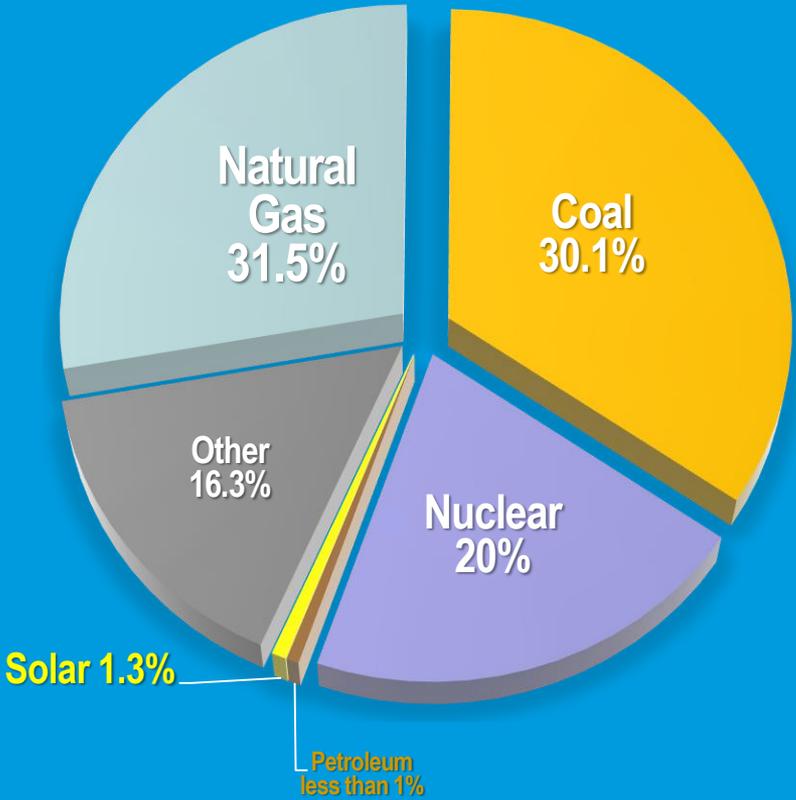
Serve more than half of Florida

Largest utility in the U.S. by electricity sold

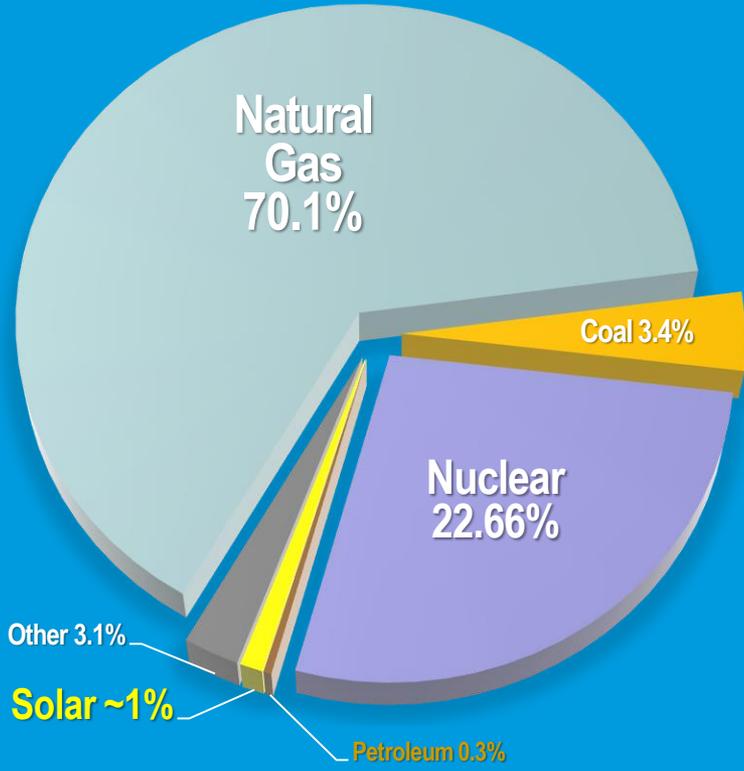


FPL is one of the **cleanest** utilities in the country

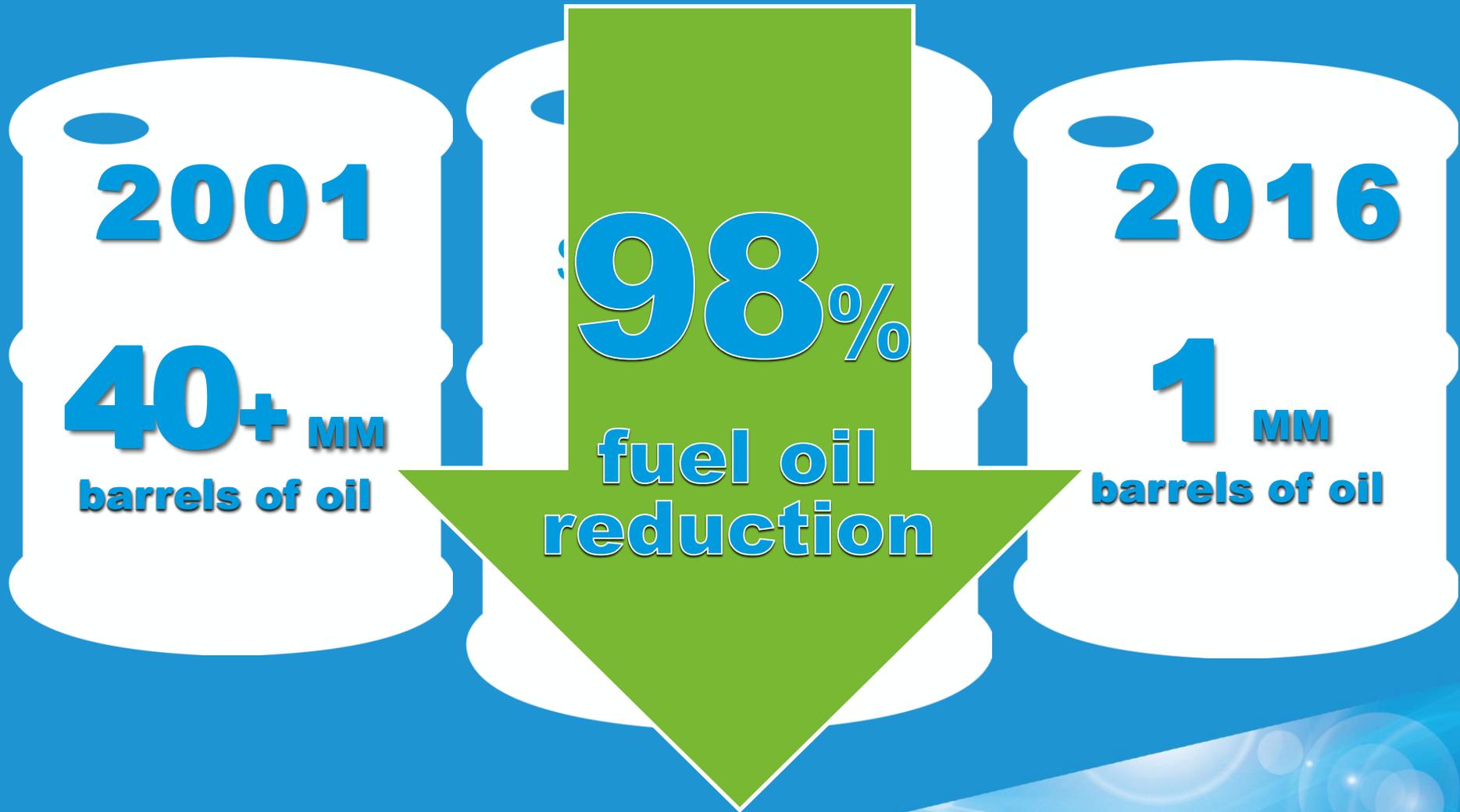
U.S.



FPL



Making foreign oil a foreign concept



With coal and oil effectively gone, **transition to solar and batteries** for resource needs has begun

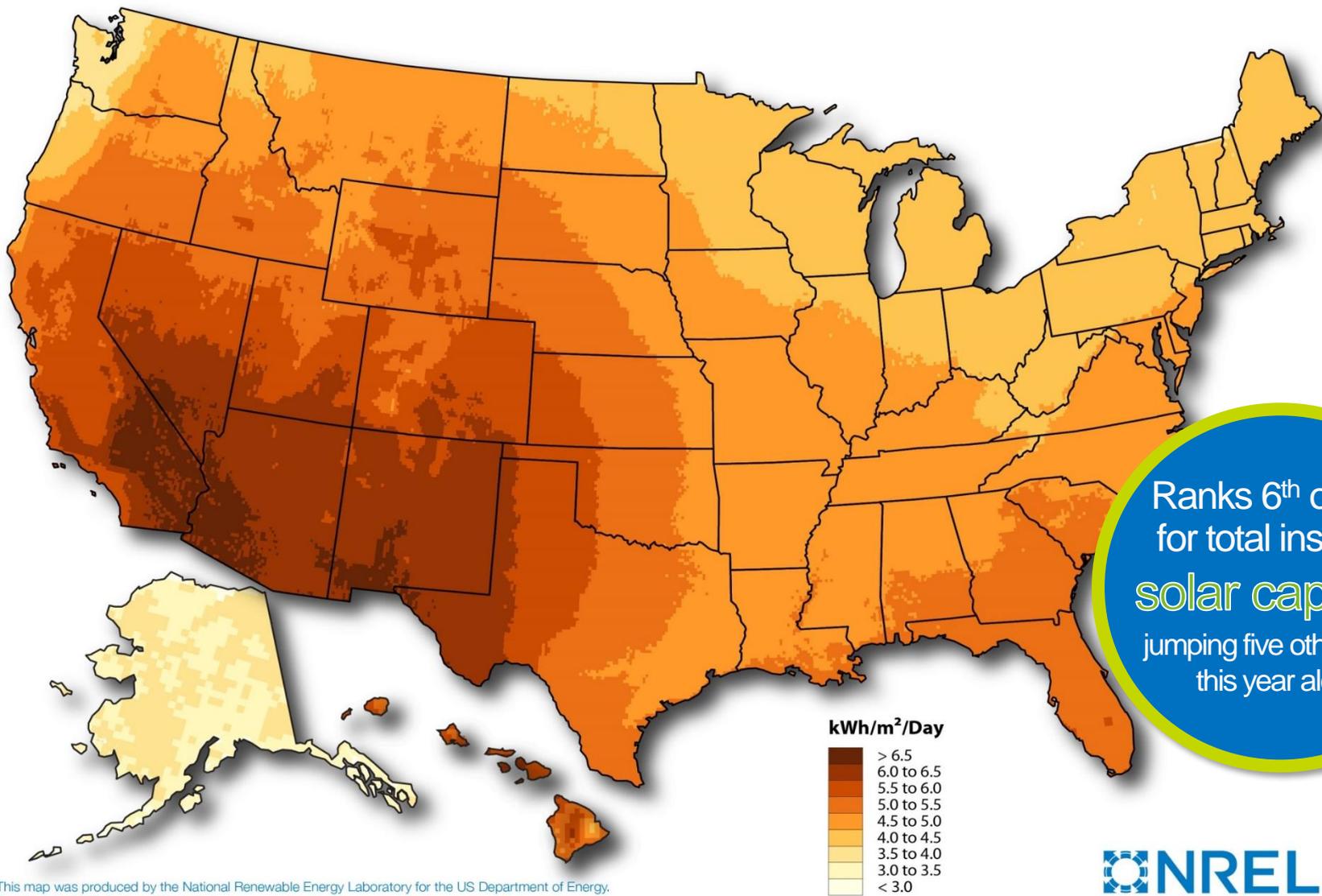


Cape Canaveral
AUGUST 2010



CHANGING THE CURRENT. **FPL.**

Florida ranks 9th in the country for solar resource

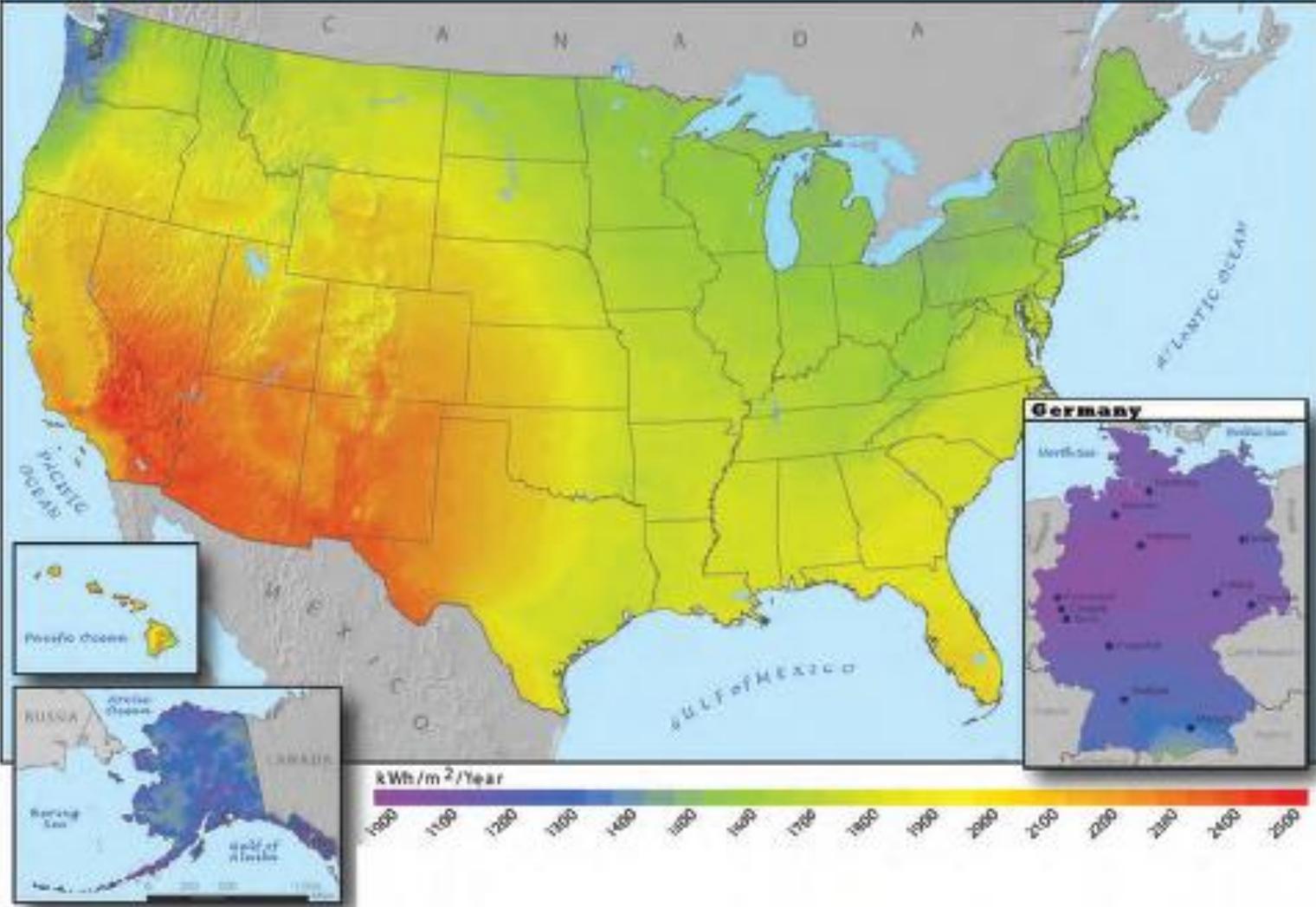


Ranks 6th overall for total installed solar capacity jumping five other states this year alone

This map was produced by the National Renewable Energy Laboratory for the US Department of Energy. October 13, 2009 Author: Billy J. Roberts

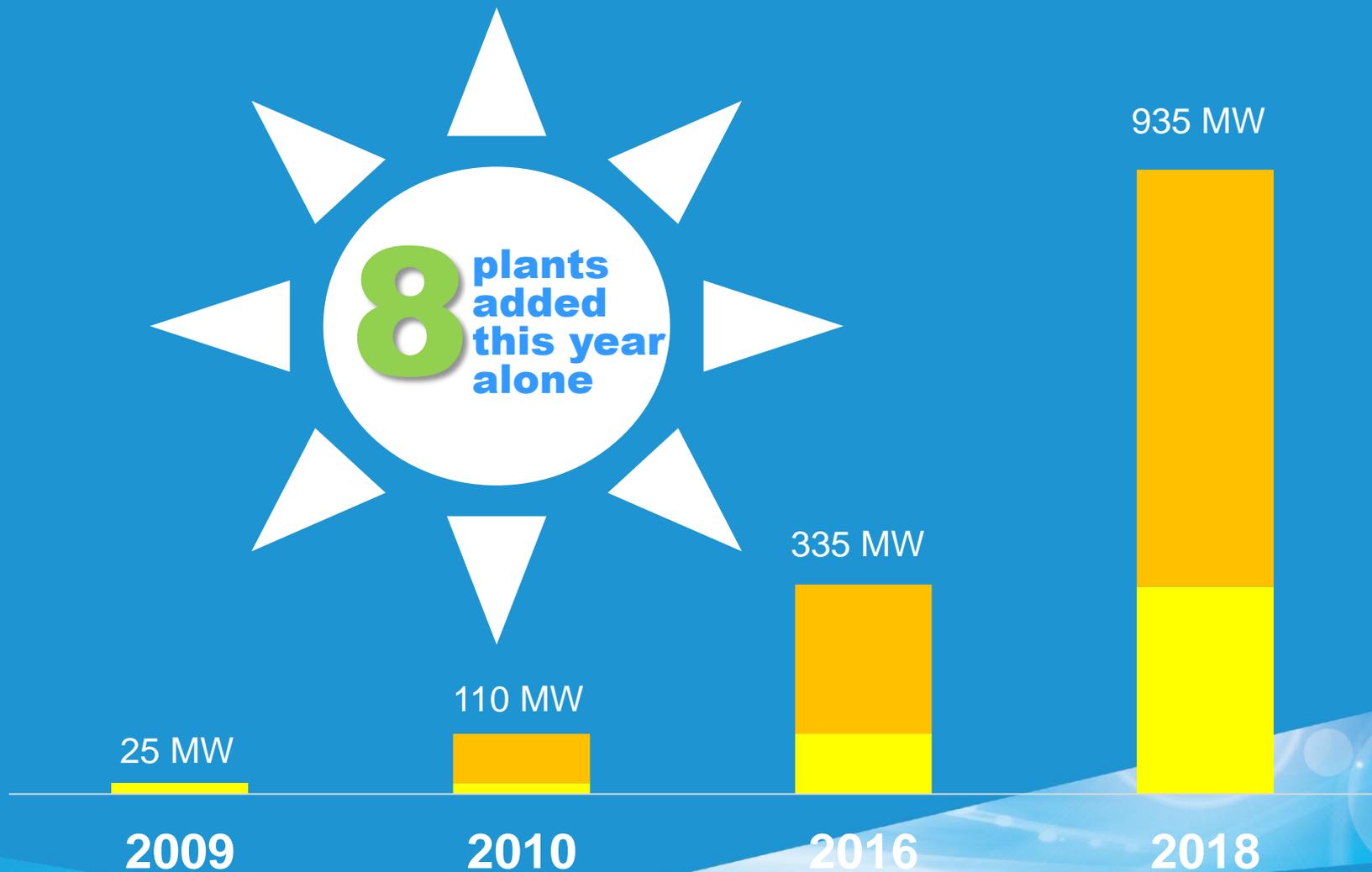


Map of U.S. compared to Germany, the world leader in Solar



Source: APA-FL PAS Report 575

FPL has 935+ MW generating clean, zero-emissions energy for customers today



FPL operates 14 major solar power plants with **four more** coming online in 2019



FPL operates 14 major solar power plants with **four more** coming online in 2019

300 megawatts in 2017

- FPL Horizon Solar Energy Center – Alachua/Putnam
- FPL Coral Farms Solar Energy Center – Putnam
- FPL Wildflower Solar Energy Center – DeSoto
- FPL Indian River Solar Energy Center – Indian River



FPL operates 14 major solar power plants with **four more** coming online in 2019

300 megawatts in 2018

- FPL Barefoot Bay Solar Energy Center – Brevard
- FPL Blue Cypress Solar Energy Center – Indian River
- FPL Loggerhead Solar Energy Center – St. Lucie
- FPL Hammock Solar Energy Center - Hendry



FPL operates 14 major solar power plants with **four more** coming online in 2019

300 megawatts coming in early 2019

- FPL Miami-Dade Solar Energy Center
 - Miami-Dade County
- FPL Interstate Solar Energy Center
 - St. Lucie County
- FPL Pioneer Trail Solar Energy Center
 - Volusia County
- FPL Sunshine Gateway Solar Energy Center
 - Columbia County



More than
10 million
solar panels
by 2021

Bringing more cost-effective solar to Florida

- As the cost of solar continues to decline, we plan to add even more solar, at a rapid pace, while still keeping customer bills among the lowest in the nation.
 - 300 MW per year 2017 – 2023
 - Nearly 2,100 megawatts



What Makes a Good Solar Site?

All sites must pass a cost-effectiveness test, key components of these test include:

- **Economy of Scale, the ability to produce ~75MW of power**
- **Location in close proximity to existing transmission line**
- **Transmission Line has injection capacity (no upgrade needed)**
- **Layouts are minimally invasive to environmentally sensitive lands**
- **Avoid wetland impacts**
- **Site requires minimal or no clearing**
- **Good access from public roads**
- **Development Regulations**

Advancing Solar in Florida

Reasons we look for large scale sites

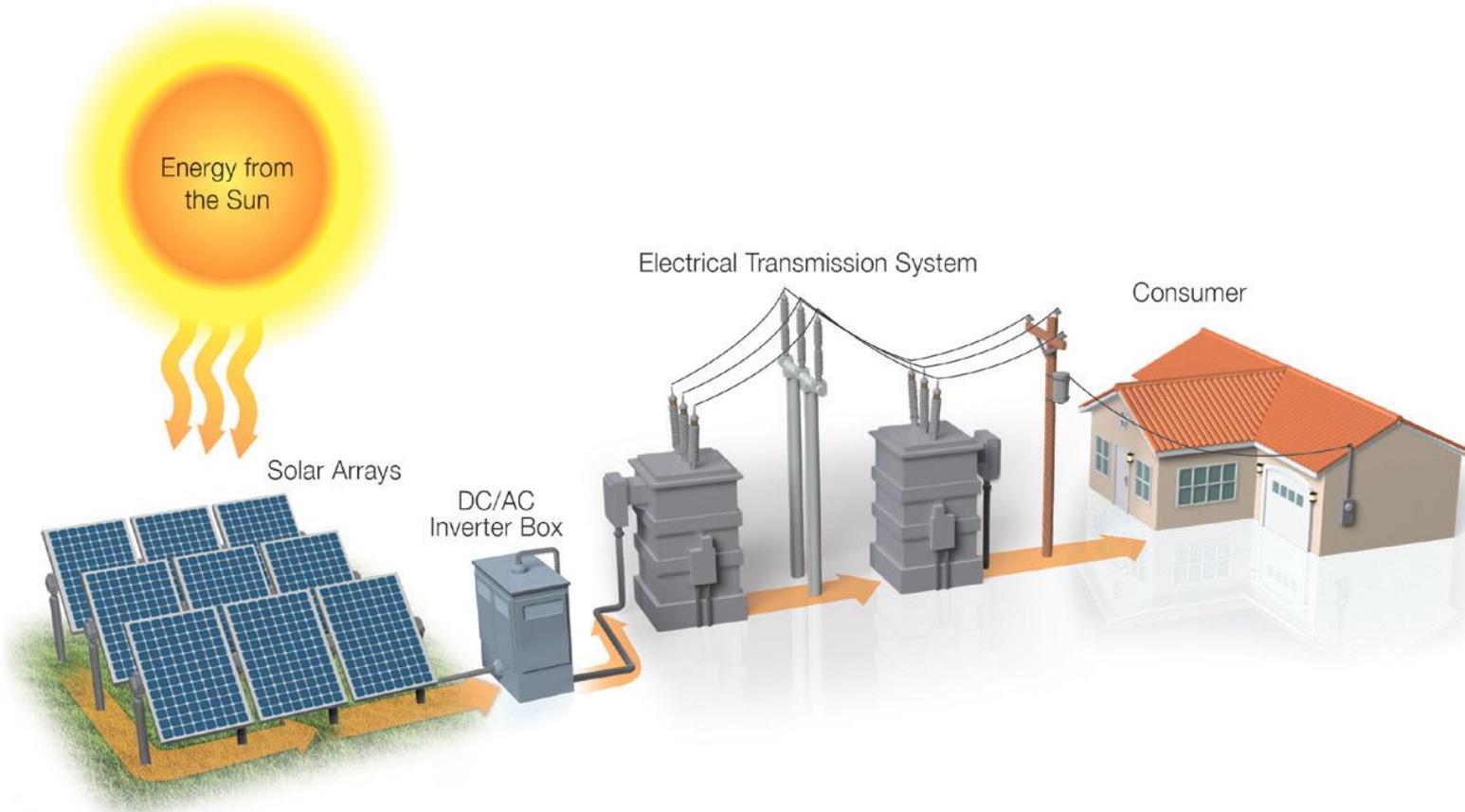
- Best economic trade of size, cost, capacity,
- Matches what is commercially available
- 74.5 MW Solar keeps process local
- Benefits all utility customers fairly
- Grid integration optimizes delivery
- Best bang for the buck
- Bigger projects mean more impact on the overall fuel makeup



Large Scale Solar (How it Works)



How does photovoltaic solar work?



As sunlight hits the solar panels, the photovoltaic energy is converted into direct current electricity (DC). The direct current flows from the panels through inverters and is converted into alternating current (AC) used by local electric utilities. Finally, the electricity travels through transformers, and the voltage is boosted for delivery onto the transmission lines, so the local electric utility can distribute the electricity to homes and businesses.

Solar Components

Installation consists of individual panels installed on a racking system resulting in minimal disturbance to the land underneath



“Farming the sun:” solar centers are highly compatible with the site’s current agricultural use

FPL SOLAR ENERGY CENTER CHARACTERISTICS:



Virtually silent



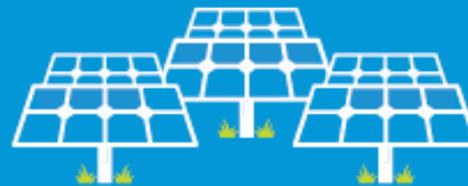
**No lights
at night**



**No increase
to traffic**

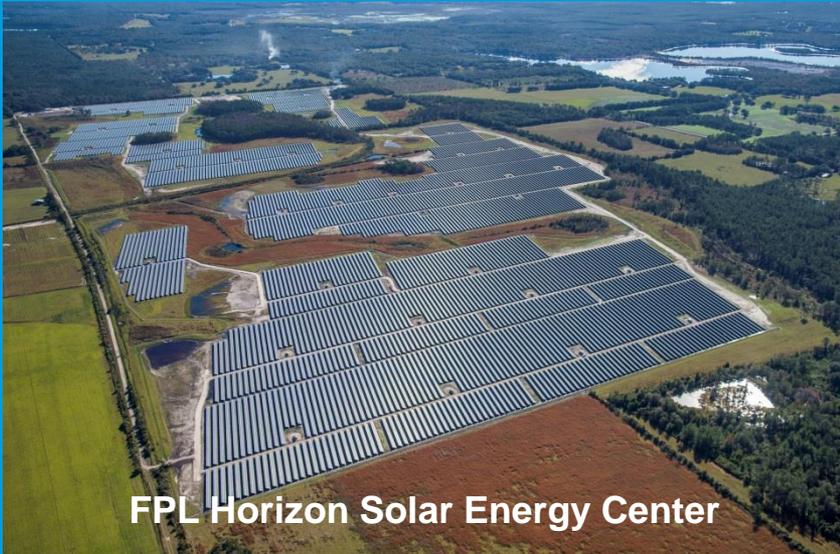


**No water
or fuel needed**



**Solar panels sit
low to the ground**

FPL Large Scale Solar Energy Centers



- Pioneer Trail Fixed Tilt



Floritam Trail, Looking Northeast - Existing View

Scale: 1" = 100'
 For an accurate drawing,
 please refer to the FPL 2012 and 2013
 Working Drawings (W.D. Technical Data).



Pioneer Trail

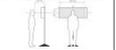
Floritam Trail
 Looking Northeast

View Location: Report Area



Soaring Plover (over Plover) Nest - 08/2014
 Soaring Plover (over Plover) Nest - 08/2014
 Redstart (over Plover) Nest - 08/2014
 Redstart (over Plover) Nest - 08/2014
 Date of Photo: 2/20/2015
 Date of Photo: 2/20/2015
 Date of Photo: 2/20/2015
 Date of Photo: 2/20/2015

COMPLY WITH THE FOLLOWING REGULATIONS:



NOTES:
 1. All dimensions are in feet unless otherwise specified.
 2. All elevations are in feet unless otherwise specified.
 3. All materials shall be as specified in the project manual.
 4. All work shall be in accordance with the project manual.

Prepared by: [Name]
 Checked by: [Name]
 Drawn by: [Name]
 Project: [Name]
 Date: [Date]
 FPL
 www.fpl.com

- Union Springs

Battery integration is the next step

Batteries
allow for
Energy
Dispatch
when sun is not
shining



Progress Pictures



Florida is in the midst of one of the **largest** solar expansions in the U.S.





Commissioned December 2016
FPL Citrus Solar Energy Center



Commissioned January 2018
FPL Wildflower Solar Energy Center

AGRICULTURAL COMPATIBILITY

“Treat Solar Farms just like Crop Farms”

- **Solar Farms can be better neighbors than Crop Farms**
- **Solar Farms have these advantages over Crop Farms:**
 - **No Dust**
 - **No Water Used or Discharged**
 - **No nutrient loading on site – reduced nitrogen discharge compared to farming**
 - **Low Traffic Trips**
 - **Very Quiet**
 - **Low to the Ground**
 - **No odors**



AGRICULTURAL COMPATIBILITY

Preferred Location is Agricultural

- **Why Agricultural Land:**
 - Usually Flat
 - Minimal Environmentally Sensitive Areas
 - Farm Road Network Established
 - Area (Neighbors) used to farming activities
- **Animal Grazing Opportunities**
 - Experimenting with sheep to keep grass trimmed

Benefits of Local Large Scale Solar



Key benefits of a 74.5 MW solar energy centers

- Site will generate enough solar power for **~15,000 homes**
- Project will create **~200-250 construction jobs**
- Emissions reduction equivalent to removing **~12,000 cars from the road each year**
- Passive **un-manned and quiet operations**
- Design **minimizes impact to wildlife and environmentally sensitive areas**
- **More renewable energy** to power our state's growing economy and increasing population



COMMUNITY BENEFITS

Solar Farms are good Neighbors for Communities

- **Benefit Local Economy**

- **Taxes –**

- Additional Tax Contributions provide additional revenue for schools and other vital services.

- **Jobs**

- 200 – 250 jobs
- Local Veteran Opportunity
- 8 – 10 month construction timeline

- **Di Minimis County Services Required**

- No schools, parks, utility needs, etc.

- **Benefit Natural Environment**

- **Pollinators**

- **Livestock grazing**

- **No Nitrogen Discharge**

- **No Water Usage**

Partnering with America's heroes on solar

- ☀️ **Veteran Hiring Opportunities**
 - ☀️ **150 Veterans hired in 2017 for solar**
 - ☀️ **Working with Veterans Florida, National Guard and other partners**
- ☀️ **Local training programs available only to Veterans prior to beginning the work on the jobsite**
- ☀️ **Future accreditation through local Florida community colleges**
- ☀️ **Initiative seeks to provide meaningful career opportunities in solar energy in the Sunshine State**



Veterans in Solar

Established partnership that links veterans with solar jobs in Florida as well as cutting-edge training at Indian River State College

- Announced partnership on April 6, 2017
- IRSC provided 5-week training course
- Two job fairs held at Indian River State College (IRSC)
- EPC contractors to lead all hiring:
- Encouraging EPCs to hire veterans & local talent



The image shows a screenshot of the Veterans Florida website. At the top, there is a navigation bar with the 'VETERANS FLORIDA' logo and links for 'WHY FLORIDA?', 'VETERANS', 'EMPLOYERS', 'ABOUT VETERANS FLORIDA', and 'NEWS'. Below the navigation bar is a large photograph of a solar farm with workers in safety gear. Overlaid on the photo is the text 'SOLAR JOBS FOR VETERANS IN FLORIDA' and 'More Than 1,000 Positions Across the State'. A 'Learn More' button is visible. Below the photo is a section titled 'Florida Puts Veterans First' with a paragraph of text.

Florida Puts Veterans First

With great education and job opportunities, a near-perfect climate and an easy-going lifestyle, Florida has all the qualities that veterans and their families want and need. Veterans Florida helps veterans learn about the many benefits the state offers and how to efficiently take advantage of them—from taxes and healthcare to work and education. We assist employers shape a successful and competitive workforce by hiring and training veterans. And we connect veterans with service providers to support them in all the ways that matter most.

Partners include: Veterans Florida, Veterans Council of Indian River County, CareerSource Florida network, Florida National Army & Air Guard, Indian River State College

Designed to work in harmony with the environment



In partnership with Audubon Florida, transforming them into bird- and pollinator-friendly havens



Commissioned 2018
FPL Horizon Solar Energy Center

Partnership with Florida Audubon

- ☀ Environmental Stewardship
- ☀ Collaboration with environmental agencies
- ☀ Identify site-specific opportunities for ecological enhancement
- ☀ Incorporate pollinator habitats



Regulations (Comprehensive Plans & Zoning Codes)



REGULATORY LANGUAGE

MOST COMMON ISSUE COMP PLAN AND CODE ARE SILENT!

- **The most common issue found with the regulation of solar energy is the lack of any regulation at all regarding solar.**
- **Many Comprehensive Plans and Zoning Codes specifically list permitted uses and do not list solar as a use.**
- **Great Example of encouragement in FLUE of Comp Plan.**

“The County shall promote energy conservation by supporting alternative energy resources including biofuel, solar and wind and ensure that Land Development Regulations (LDRs) do not prohibit their use.”

There are at least three distinct types of local plans:



Source: APA-FL PAS Report 575

REGULATORY LANGUAGE

SECOND MOST COMMON ISSUE – FOSSIL POWER PLANT

- The second most common issue found the regulation of solar energy relates to only classifying facilities capable of generating electricity as a Power Plant which are also identified as:
 - Public Utility
 - Public Facility
 - Electric Generating Plants
 - Power Generating Facilities
 - Essential Services
 - Major Utility Installation
- Encouragement can be achieved by specifically addressing Photovoltaic Solar Facilities and accessory uses/structures.

Solar is not THIS!



Togtoh Power Plant - China

REGULATORY LANGUAGE

Examples of Problematic Zoning Language

Development Standards

- 2,500 acres
- 1 mile separation from schools
- 1 mile separation from platted or recorded subdivisions with lot sizes of five acres or less
- Buffers must be 100 feet wide and shall meet an 80% opacity standard.

REGULATORY LANGUAGE

Examples of Problematic Comprehensive Language

- “The minimum tract size for electric generating facilities shall be 2,500 acres, and a comprehensive plan amendment will be required for any such facility in order to establish an intensity standard.”

David Morley, AICP

Planning Advisory Report #575 – Planning for Solar Energy

Refresh our understanding of energy, renewables are being embraced by the public.

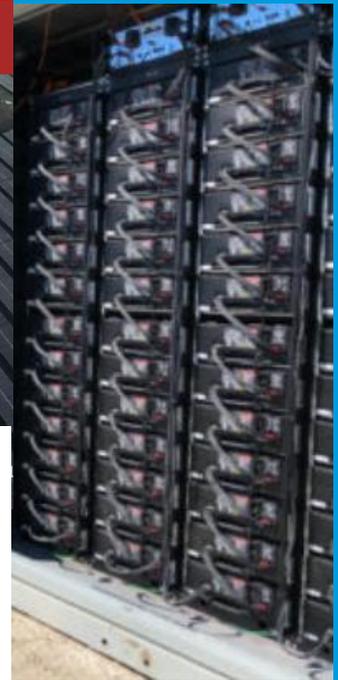
- A local interest in renewable energy issues may be attributable to a growing interest in sustainability ...
- ...as seen with the local foods movement, which emphasizes the economic, social, and environmental benefits of local production.
- Local energy has direct sustainability parallels to local foods, and almost every community has a substantial, but largely unused, local solar resource.

THE FIRST SOLAR POWERED TOWN IN AMERICA

About Solar Energy In Babcock Ranch

Production of solar energy at a utility scale is a key part of our sustainability commitment. We partnered with Florida Power & Light (FPL) to ensure that the net production of clean, renewable energy at Babcock Ranch exceeds the total amount the town will consume.

Babcock Ranch donated the land for the solar facility – but it is owned and operated by FPL. Residents are billed for the energy they use at the same rates as any other FPL customer. However, homes achieve energy savings through established and reliable building technologies that don't require as much power to operate.



REGULATORY LANGUAGE

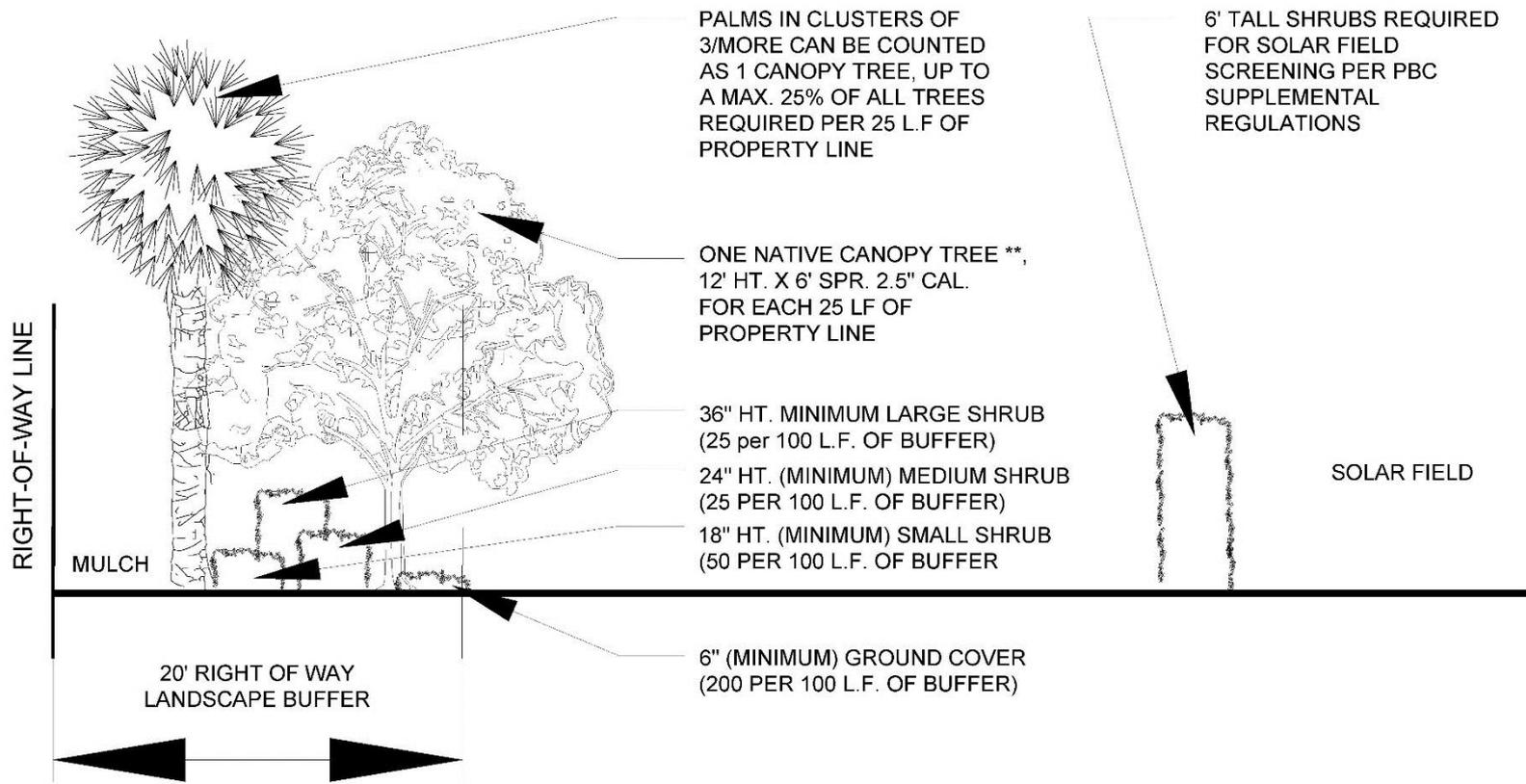
Examples of Problematic Landscape Language

- Interior Canopy requirements often force photovoltaic panels to compete with canopy trees for sunlight. (i.e. 30 percent or more of the site will be under mature canopy in 20 years.)
- “All solar farm sites must comply with the landscape requirements of *[Code]*, and shall require a minimum twenty foot (20) foot buffer containing 4 canopy trees, understory tree and 16 shrubs per 100 linear feet.”
- Incompatibility Buffers required for any non-residential use adjacent to a residential zoning district.

David Morley, AICP

Planning Advisory Report #575 – Planning for Solar Energy

- Plans and Regulations written without the solar resource in mind can limit solar use.
- Even in cases where zoning codes explicitly address solar energy systems, subtle barriers such as height restrictions, lot coverage limitations, and setback, screening, landscaping, and utility requirements may still impede solar development.
- Communities can make procedure changes that facilitate solar. Streamline development review, ministerial approvals, expedite approval processing.



COST ESTIMATES:

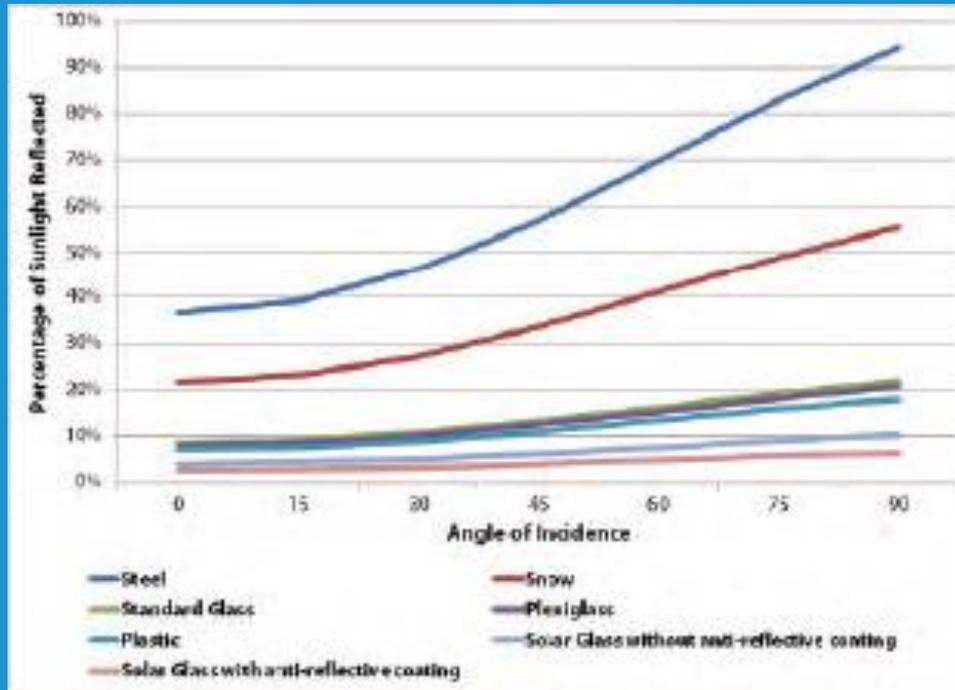
1. 6' TALL HEDGE = \$42 PER L.F.
2. 20' RIGHT OF WAY BUFFER = \$53.75 PER L.F.
3. 20' RIGHT OF WAY BUFFER WITH 25% TREE CANOPY REDUCTION = \$49.25 PER L.F. (IF APPROVED BY PBC)
4. 20' RIGHT OF WAY BUFFER WITH 50% TREE CANOPY AS PALMS = \$48.25 PER L.F. (IF APPROVED BY PBC)

REGULATORY LANGUAGE

Examples of Problematic Zoning Language

- Fully mature shrubs, opacity requirements, shade trees requirements should be reviewed.
- Encourage solar development by showcasing the use.
 - many counties want the visibility from major highways and/or rural roads.
- Eliminate Ag/Ag buffers.
- If needed - require screening against existing residential.
- Small shrubs where future residential.

Concerns about Glare



Percentage of sunlight reflected by different surfaces at different angles of incidence

Source: APA-FL PAS Report 575

Airports with Solar



➤ **70 Airports in the United States contain solar projects***



REGULATORY LANGUAGE

Examples of Problematic Zoning Language

- **Agricultural Lands in the rural areas of the County are to be used predominantly for crop cultivation ,livestock, specialty farms, silviculture activities and dwelling units.**
- **Highway (Major Roadway) Uses.**
- **Future Paper Road Maps.**
- **Highway Interchange Overlays.**

REGULATORY LANGUAGE

Examples of Problematic Language

- **Urban Growth Area – require development to use central water/sewer as a condition for development.**

REGULATORY LANGUAGE

Examples of Problematic Comprehensive Language

- **“All solar farms and solar energy systems shall meet all requirements of the Florida Building Code and shall be inspected by the Building Inspector.”**
- **FBC and FSS allow for an exemption for structures or facilities which are directly involved in the generation, transmission, or distribution of electricity.**

REGULATORY LANGUAGE

Examples of Problematic Comprehensive Language

- **Community Facilities and Services acreage in each Agricultural zoning district shall not exceed 5 percent of its total land area without a comprehensive plan amendment to designate the area as a Public Facilities future land use.”**

REGULATORY LANGUAGE

Examples of Problematic Zoning Language

- “Lot Coverage: The total horizontal ground area of a lot covered by all buildings or structures not open to the sky.”



REGULATORY LANGUAGE

Almost the entire area is permeable, open area that allows grass to grow.



REGULATORY LANGUAGE

Good examples of language to use DEFINITIONS (GLOSSARY)

- **Solar Energy System:** Any device or combination of devices or elements which rely upon direct sunlight as an energy source, including but not limited to any substance or device which collects sunlight for use in the heating or cooling of a structure or building, the heating or pumping of water, or the generation of electricity. A solar energy system may be used for purposes in addition to the collection of solar energy. These uses include, but are not limited to, serving as a structural member or part of the roof of a building or structure and serving as a window or wall. A solar energy system may be mounted on the building or on the ground and is not the principal use of the property.

REGULATORY LANGUAGE

Good examples of language to use DEFINITIONS (GLOSSARY)

- **Solar Energy Facilities (Solar Farm):** A production facility for electric power that utilizes photovoltaic modules (panels) to convert solar energy to electricity whereby the electricity that is produced is delivered to the transmission system and consumed off-site. Solar farms consist principally of photovoltaic modules, a mounting/racking system, power inverters, transformers, and associated components. Solar generation is generally the principal use of the property but solar farms may also include administration/maintenance buildings, transmission lines, substations, energy storage equipment and related accessory uses and structures.

REGULATORY LANGUAGE

Good examples of language to use SPECIFIC STANDARDS

- Solar Energy Facilities (Solar Farms) shall be considered a permitted use within the _____, _____, _____ zoning districts.
- Solar Energy Facilities shall be exempt from all landscape requirements.
- For purposes of calculating open space requirements, the area of the solar panels and transmission lines shall be considered open space.

REGULATORY LANGUAGE

If landscaping is required adjacent to residential SPECIFIC STANDARDS

- Except for required landscaping adjacent to existing residential uses, Solar Energy Facilities shall be exempt from all landscape requirements.
- Within the first ___ feet of the required ___ foot setback adjacent to residential uses, native shrubs and grasses shall be retained to provide a minimum 6' high, 50% opaque screen of vegetation. If existing vegetation is not sufficient to meet this requirement, then supplemental native shrubs may be utilized to meet this requirement.

REGULATORY LANGUAGE

APPROVAL PROCESS

- **Solar Energy Facilities (Solar Farms) that are not adjacent to residential zoning districts require Administrative Site Plan Review approval.**
- **Solar Energy Facilities (Solar Farms) that are adjacent to residential zoning districts require Conditional Use approval.**

THANK YOU



QUESTIONS?

American Planning Association Florida Chapter State Conference



GUNSTER
FLORIDA'S LAW FIRM FOR BUSINESS



CHANGING THE CURRENT. **FPL.**

I Love Solar..... BUT