



**IBERDROLA**  
**RENEWABLES**

# Developing a Solar Project

March 24, 2015



# Iberdrola Renewables, LLC



## A collection of exceptional assets...

#2 owner of wind projects in the U.S. with more than 5.7 GWs owned and contracted

\$9.5 billion of U.S. assets at over 50 installed plants

750+ employees at the end of 2014, compared with 12 in 1999

636 MW of CCGT & peaking capacity on the strategic CA-OR border

Represents 39% of Iberdrola S.A.'s global wind capacity

## US Renewables



### Wind

5,700+ MW



### Power

536 MW CCGT  
100 MW peaking



### Solar & Biomass

50 MW Solar  
55 MW Biomass

And clean gas generation

...focused on operational excellence and selective growth



# U.S. Power Assets & Customers (by NERC region)



- 1 - Klondike III  
76.5 MW owned  
PG&E
- 2 - Hay Canyon  
100.8 MW owned  
Snohomish PUD
- 3 - Klondike  
24 MW owned  
BPA
- 4 - Klondike III  
223.6 MW owned  
PG&E, PSE, BPA,  
EWEB
- 5 - Star Point  
99 MW owned  
MID
- 6 - Klondike II  
75 MW owned  
PGE
- 7 - Big Horn  
199.5 MW owned  
MID, Santa  
Clara, Redding
- 8 - Big Horn II  
50 MW owned  
MID, Santa  
Clara, Redding
- 9 - Juniper Canyon  
151.2 MW owned
- 10 - Pebble Springs  
98.7 MW owned  
SCPPA
- 11 - Leaning Juniper II  
201.3 MW owned

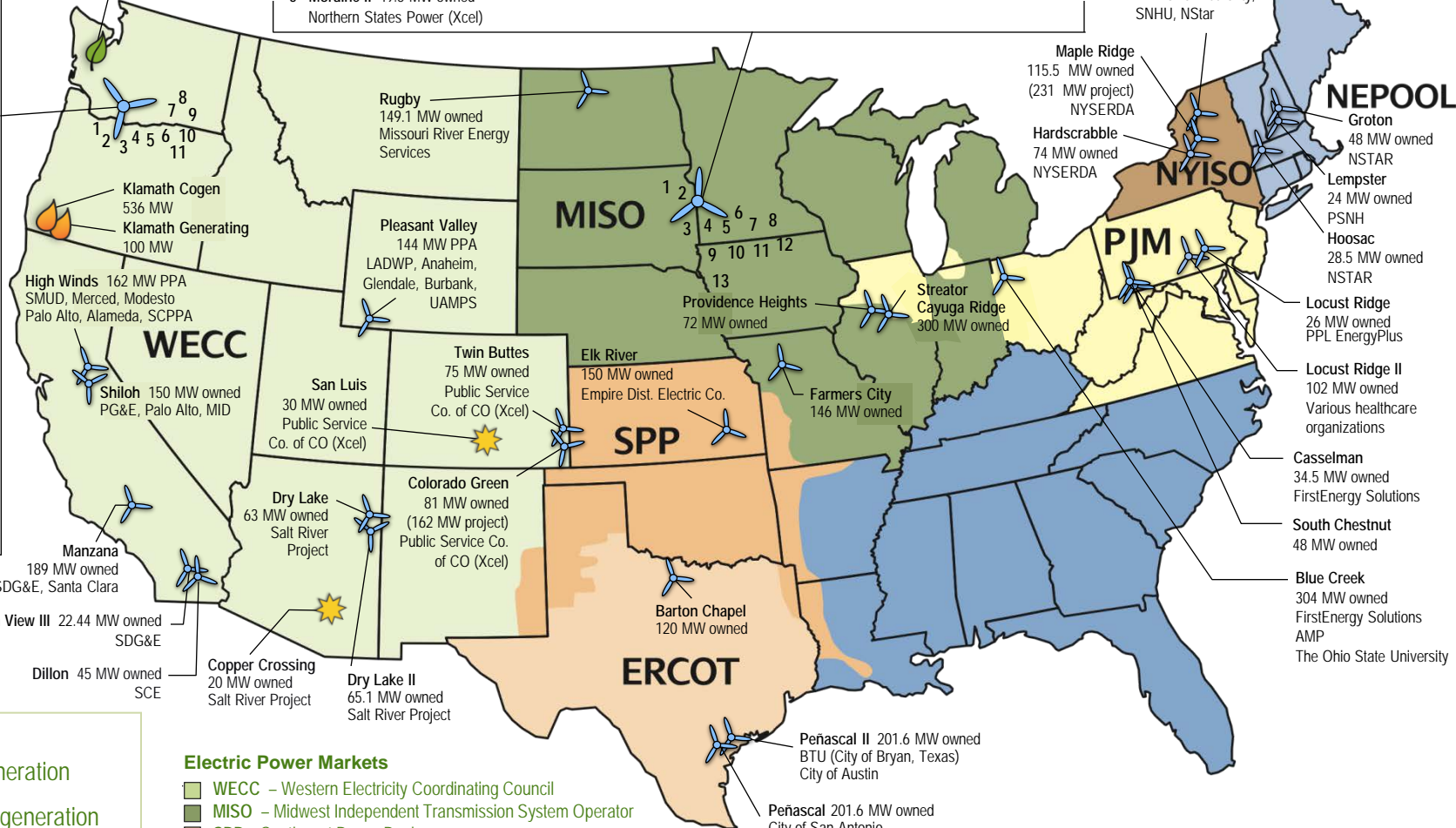
**WIND PROJECTS**

Simpson Biomass  
55 MW PPA  
SMUD

- WIND PROJECTS**
- 1 - Buffalo Ridge 50.4 MW owned  
NIPSCO
  - 2 - Buffalo Ridge II 210 MW owned  
NIPSCO
  - 3 - MinnDakota 150 MW owned  
Northern States Power (Xcel)
  - 4 - Moraine 51 MW owned  
Northern States Power (Xcel)
  - 5 - Moraine II 49.5 MW owned  
Northern States Power (Xcel)

- 6 - Elm Creek 99 MW owned  
Great River Energy
- 7 - Elm Creek II 148.8 MW owned  
Great River Energy
- 8 - Trimont 101 MW owned  
Great River Energy
- 9 - Flying Cloud 43.5 MW owned  
Alliant
- 10 - Winnebago 20 MW owned  
Dairyland Power
- 11 - Top of Iowa II 80 MW owned  
Madison Gas and Electric, Wisconsin Public Power
- 12 - Barton 160 MW owned  
NIPSCO, WI Public Power, Ino, WE Energies
- 13 - New Harvest 100 MW owned  
Ameren, ComEd

Maple Ridge II  
45.4 MW owned  
(91 MW project)  
NY Power Authority,  
SNHU, NStar



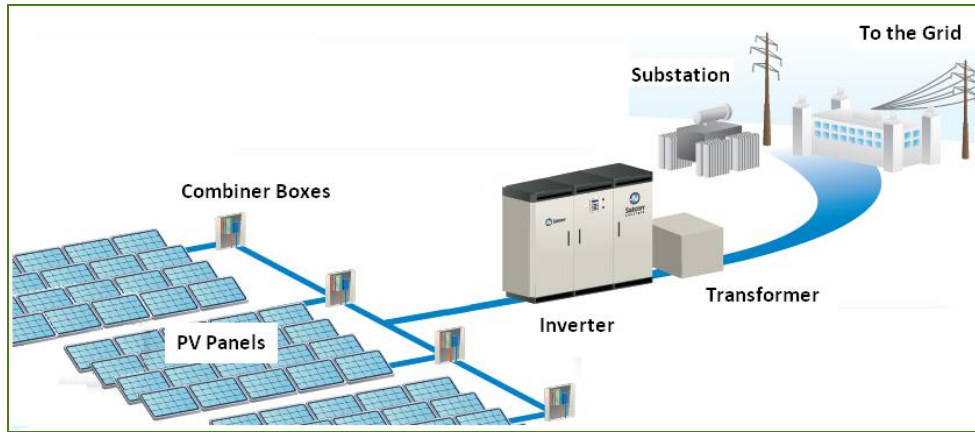
- Wind generation
- Thermal generation
- Biomass generation
- Solar generation

**Electric Power Markets**

- WECC – Western Electricity Coordinating Council
- MISO – Midwest Independent Transmission System Operator
- SPP – Southwest Power Pool
- PJM – Pennsylvania New Jersey Maryland Interconnection
- ERCOT – Electric Reliability Council of Texas
- NYISO – New York Independent System Operator
- NEPOOL – New England Power Pool

Assets owned by Iberdrola Renewables, LLC, except where noted as a Power Purchase Agreement (PPA)

# Solar project components





# Solar Panels

Technology? DC to AC ratio?



# Where to start

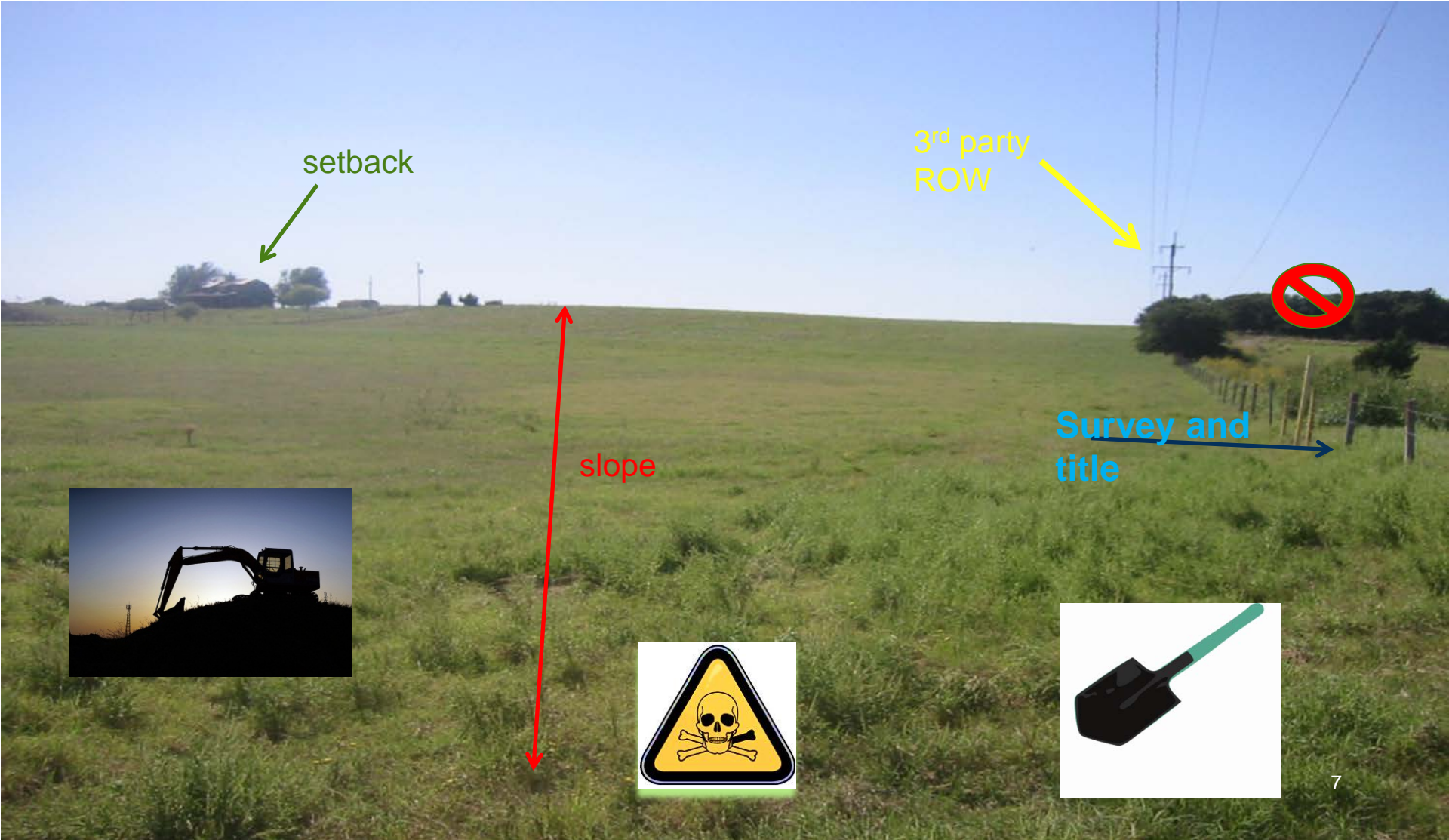
## What is your strategy?

- What is your business model? Developer, operator, builder, project flipper, finder.
- How are you going to get paid for the power you produce?
- Who is your customer?
- Why are they going to buy your power or project? Price, location, other factor.
- In which balancing authority/RTO/ISO is your project located?
- How many other projects are being developed around you and are in the interconnection queue?
- Do you have the credit to support the transaction?
- Local, state and federal incentives?



# Land

What part of the property is usable?



# Interconnection and access

## Find an electrical engineering firm

- With whom are you interconnecting: SRP, APS, TEP; Electric Cooperative, WAPA?
- Regulatory jurisdiction: Arizona Corporation Commission, municipality, FERC?
- Interconnection rules: data, models, costs, timeline, compliance.
- Transmission service? Do you need it, how much is it?
- Right-of-way to substation: where is your point of interconnection?





# Due Diligence

## Budgeting and Planning

### Land

- Financeable title

### Permitting

- County zoning and permits
- State permits
- Federal NEPA and ROW

### Studies

- Cultural
- Biological
- Wetlands or waters of the U.S. - US Army Corps of Engineers

### Engineering

- Drainage design/floodplains
- Geotechnical
- Design
- Electrical production: on site radiometer
- Site survey: contours, grade

# Financing, Procurement

## Who is paying for construction?

- Technology: module selection? Fixed or tracking? Energy yield?
- Procurement cycle: long-lead item purchase and delivery schedule?
- Return requirements of equity and debt?
- Bonds or grants available?
- Engaging 3<sup>rd</sup> parties for financing or project sale?
- Credit support: bond, letter of credit or cash.
- What contractual risks are you wearing and how much is it worth?
- Warranties: technology and the ones you are giving.
- Contractual conditions precedent? Exit clauses?



# Construction

## EPC contractor and Logistics



- federal or county plan review/permits/fees
- traffic routing
- building permits \$\$
- six to nine months to build
- site clearing and grading – moving earth \$\$
- install piers and panels – geotech and slope
- connect circuits
- testing and commissioning

Questions?

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