The Honorable Dan Cronin, Chairman, DuPage County Board

John Carpenter, President & CEO, Choose DuPage

Lisa Albrecht, Illinois Solar Energy Association

Scott Vogt, ComEd

Cesar Romo, Continental Electrical Construction Company

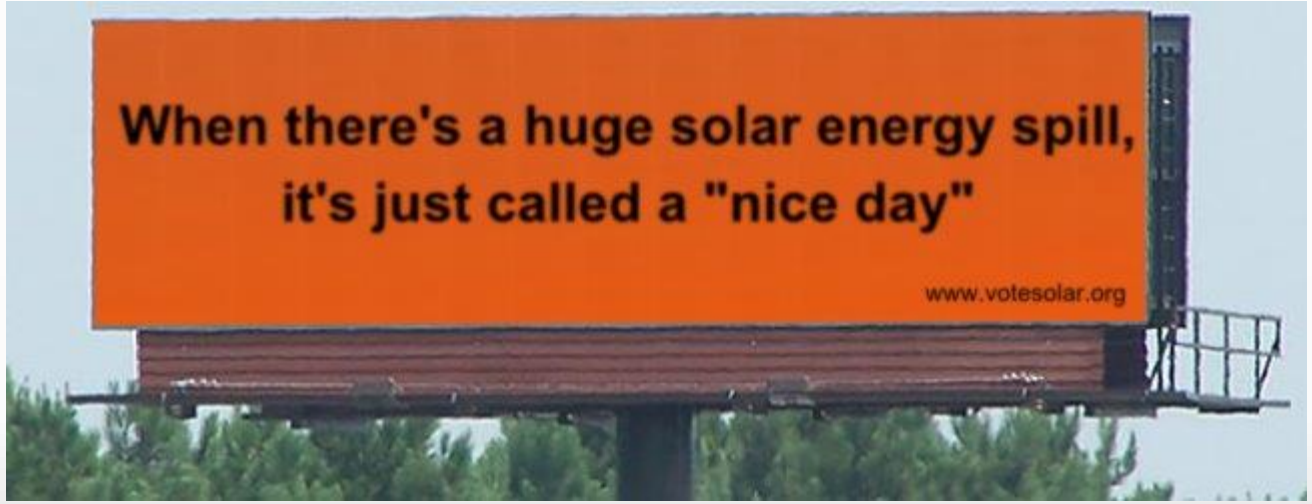
Agenda for Thursday, October 25, 2018

7:30am	Registration & Continental Breakfast
8:00am	Welcome Remarks
8:10am	Featured Speakers
9:00am	Q & A
9:30am	Event Concludes

Sponsored by:

choose dupage Economic Development Alliance | The County of DuPage Wheaton, Illinois | Power Forward DuPage

There's been a huge
SOLAR ENERGY SPILL!!!
Let's go outside
& play in it!
OTHER 98%


When there's a huge solar energy spill,
it's just called a "nice day"
www.votesolar.org

How Installing Solar Can Result in Big Savings for Commercial Properties

October 25, 2018

Illinois Solar Energy Association (ISEA)

The ISEA mission is to educate and advocate for the widespread application of solar, wind and other forms of renewable energy to the people of Illinois.

- Established in 1975
- 501(c)3 charitable organization
- Membership based organization, with 400 individual/family members & 150+ Businesses
- Hosts the annual IL Solar Tour as part of the National Solar Tour

Agenda

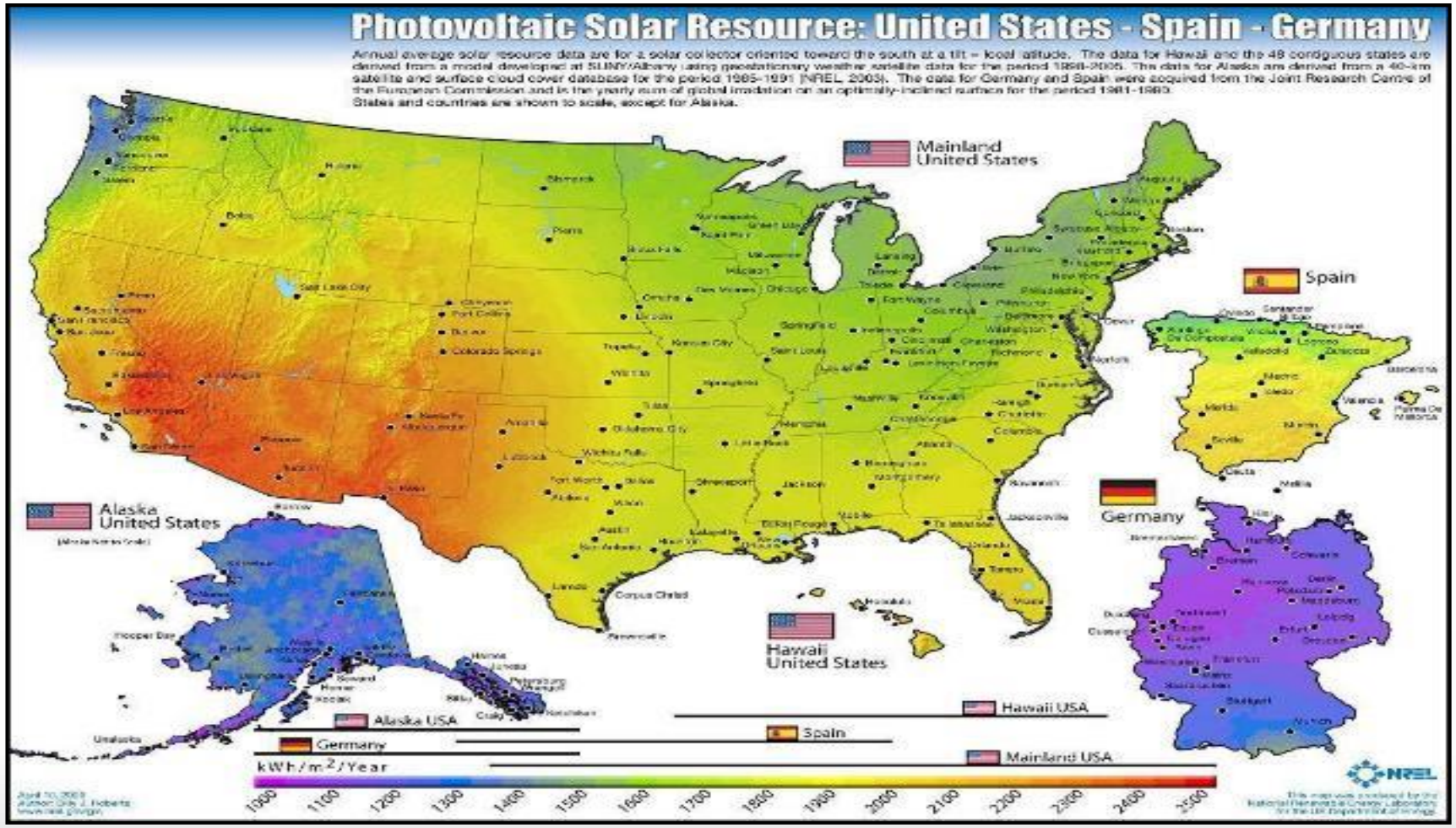
- Solar Myths
- Tech 101
- Future Energy Jobs Act basics (FEJA)
- Tips on Getting Started

Solar Myths

- Too Shady
- Too Expensive
- Too Hard
- Limited Ability
- Not Scalable

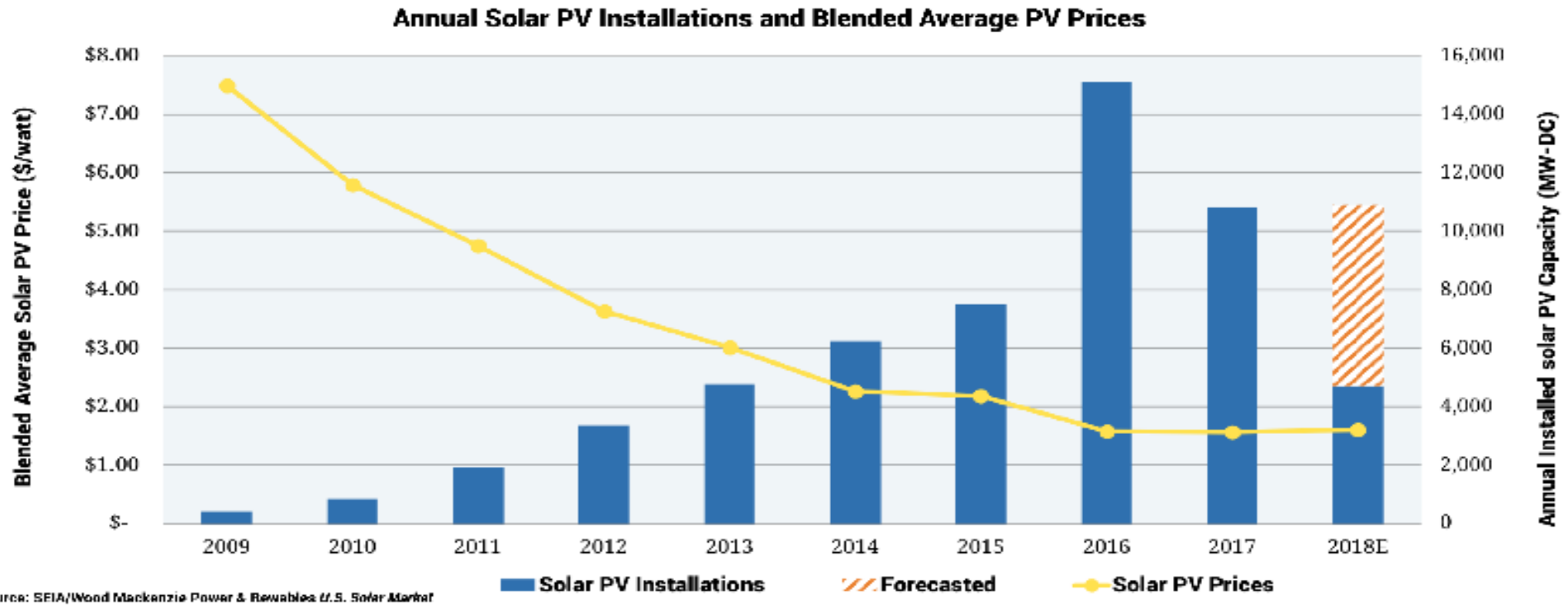
Not enough sun?

Alaska



Germany

Too Expensive?



Source: SEIA/Wood Mackenzie Power & Renewables *U.S. Solar Market Insight*; Lawrence Berkeley National Laboratory, Tracking the Sun

gtmresearch a new Wood Mackenzie

SEIA Solar Energy Industries Association®

©2018

Too Expensive?

Illinois State Incentives

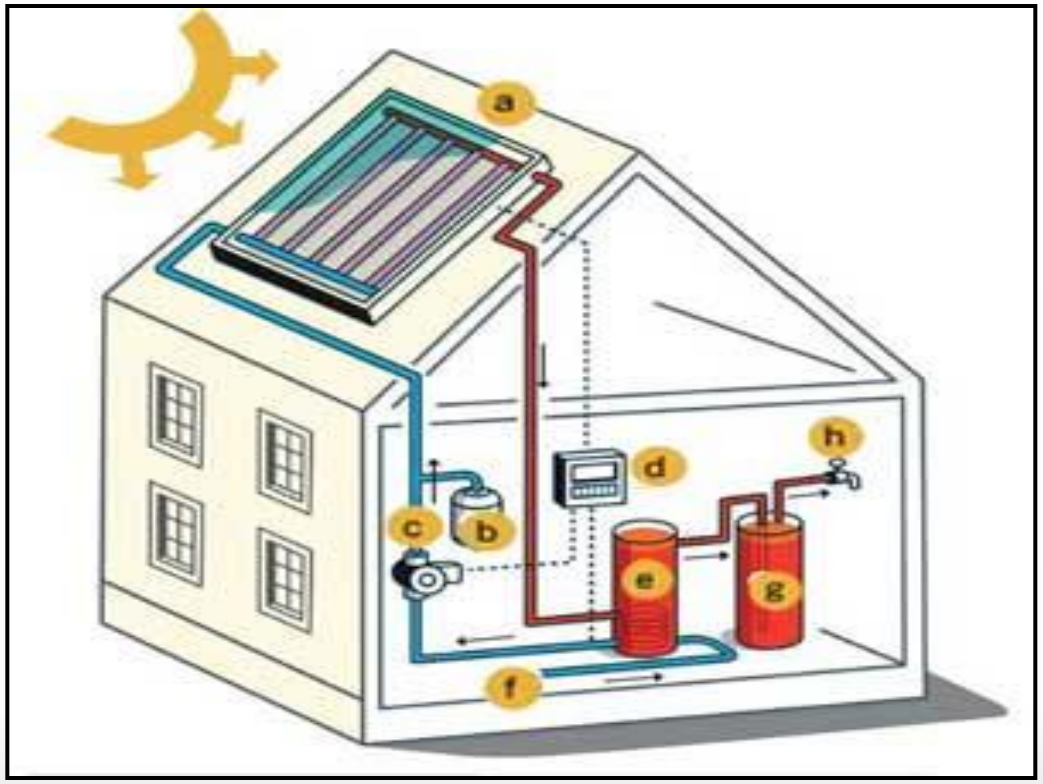
- State Renewable Energy Credits

Federal Incentives

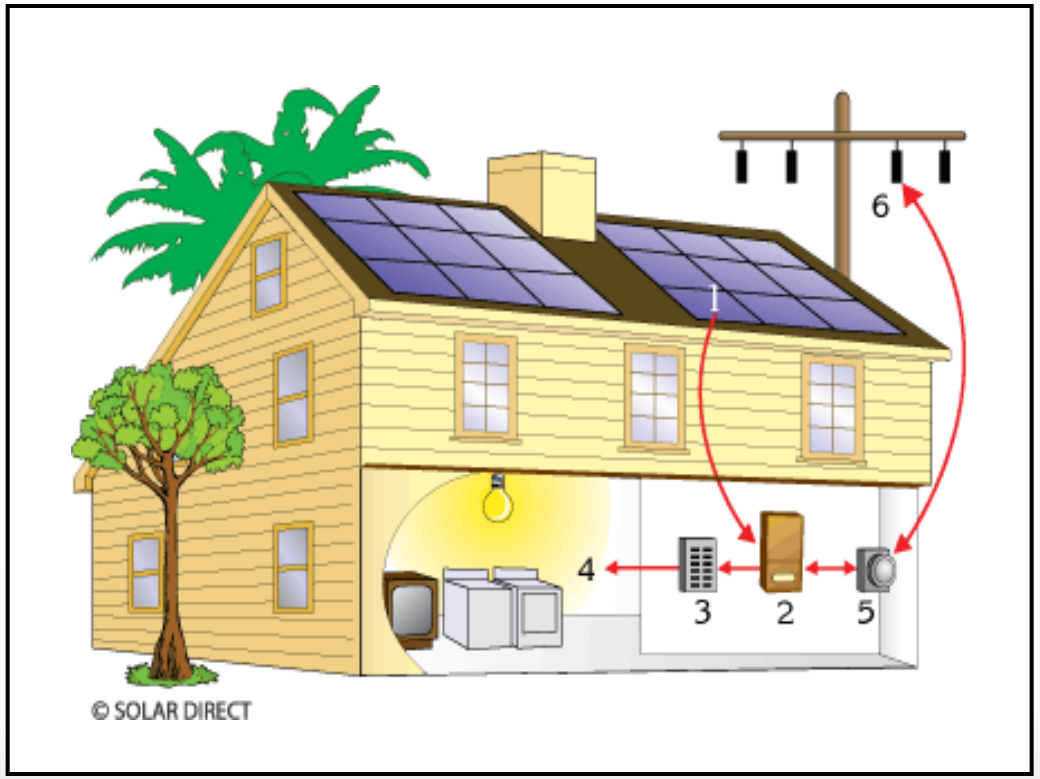
- 30% unlimited Tax Credit
- Businesses can take Accelerated Depreciation

Too Hard?

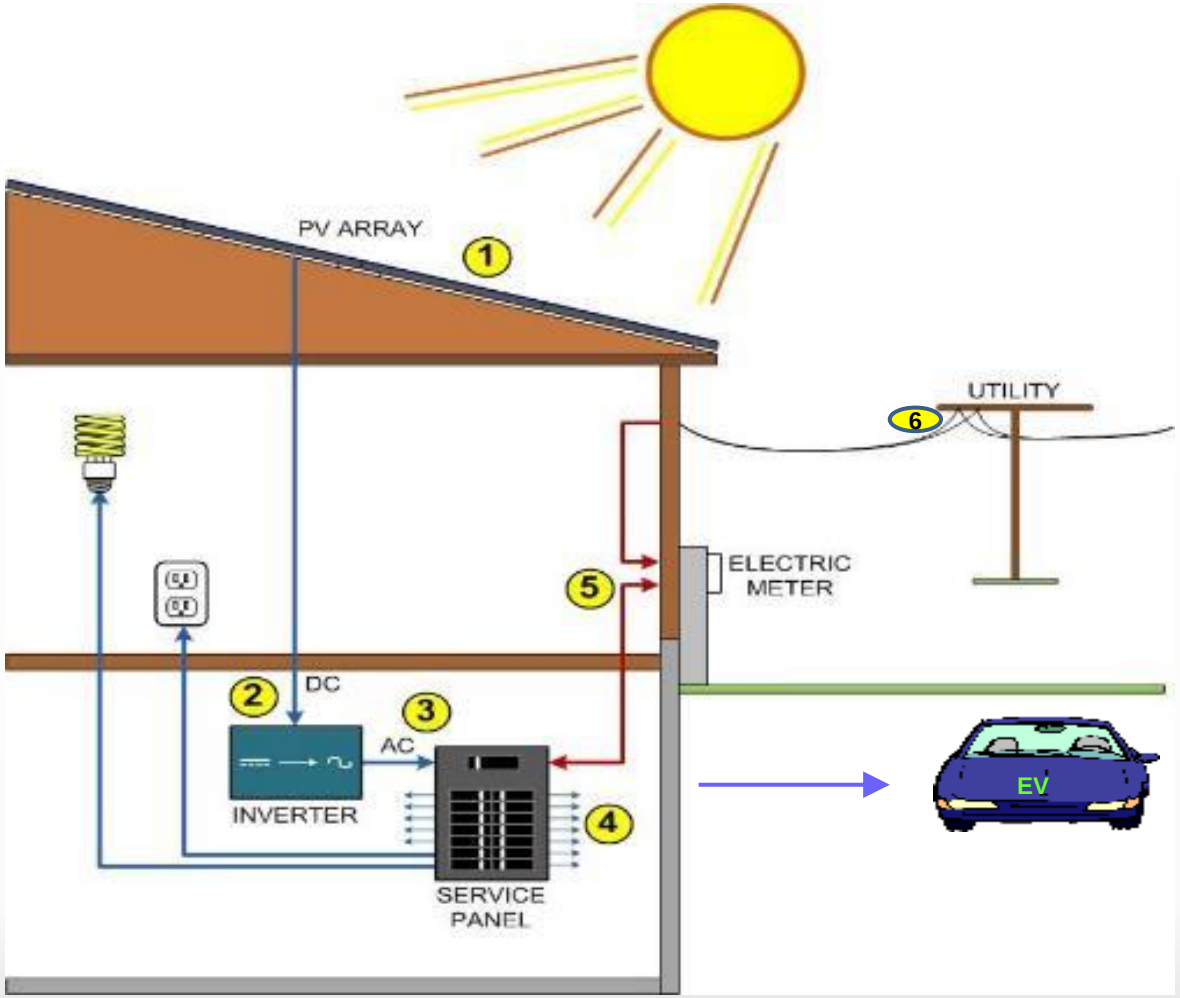
Solar Hot Water



Solar Electricity (PV)



Solar Electricity – Photovoltaic (PV)



Primary Components

1. PV Collectors
2. Inverter/Micro-Inverter
3. Service Panel
4. Household Load
5. Electric Meter
6. Grid & Net Metering

Residential Rooftop Solar

System Characteristics

- Common size: 5 – 15kW DC
- Most maximize roof area
- Energy analysis critical
- ICC Qualified Installer
    - NABCEP certification!
- Mostly roof-mounted so condition matters
- Easy interconnection typically

REC Details

- Eligible for ABP
- RECs will require a 3rd party
- Systems <10kW will be paid once energized
- Consumer Protections will be key
- Permitting is lengthiest part
- Installation typically <4 days on site

C&I Solar

System Characteristics

- Up to 2 MW AC in size, per building
- Mostly roof-mounted (ballasted racking if retrofit on flat roof)
- ICC Qualified Installer
- Eligible for $250/kW DC DG Rebate in exchange for smart inverter operation
- Centralized or decentralized inverters

Timing

- Eligible for (ABP)
- Systems >100kw can be Approved Vendor
- REC Price Adders for small commercial systems
- Need Host Acknowledgement, signed ISA, permits to apply
- C&I DG projects have 12 months to energize after ABP contract execution

2.85MW - Currently Illinois' largest rooftop solar project.
IKEA distribution facility, Joliet

Community Solar

System Characteristics

- Must be smaller than 2 MW AC
- Mostly ground-mounted
- ICC Qualified Installer
- Many will be on agricultural land
- Centralized or decentralized inverters
- Typically pole mounted interconnection equipment
- Largest subscriber <40% system size
- Subscribers must be in same utility territory as the project

Timing

- Eligible for (ABP)
- Systems >100kW can be Approved Vendor
- Need ISA, permits to apply
- Community solar projects have 18 months to build after ABP contract execution

Utility-Scale Solar

System Characteristics

- Minimum 2 MW AC. No upper limit.
- Installed by a ICC Qualified Installer
- Mostly ground-mounted
- Can be fixed or tracking systems
- Can interconnect on 3-phase line or transmission-level line
- Power offtake: ARES, utilities, C&I direct

Timing

- NOT eligible for ABP
  - IPA Procurements Fall '17 – Fall '19
- Qualifications to apply:
  - Application fees
  - Located in Illinois (or adjacent state?)
  - 50% site control
  - Permits/interconnect not required
- Must be constructed and operational by June 1, 2021 at the latest

Grand Ridge Solar Farm – LaSalle Co.
Currently Illinois' largest utility-scale solar project

Future Energy Jobs Act

a.k.a. FEJA

Disclaimer

This presentation reviews the IL Power Agency's (IPA) Long-Term Renewable Resources Procurement Plan that was filed for IL Commerce Commission (ICC) Approval on December 4, 2017.

Program rules are subject to change, based on the ICC approval/modification and any subsequent revisions by the IPA.

REC prices shown in this webinar and the IPA plan are not final and subject to change before the launch of programs.

Background

- Broken Policies slowed growth in IL
- IL ranked about 41th in installed capacity in 2017
- National solar jobs growth everywhere else!
- Not hitting our Renewable Portfolio Standard Goals

RECs are IL new “currency”

System owner installs solar array

Solar system produces a number of MWh per year (1 MWh = 1 REC) (1,000 kWh = 1 REC)

IPA facilitates the REC program on behalf of public utilities

- 15 year contracts
- Systems <10kW compensated when energized
- Systems >10kW receive 20% when energized, balance over 5 years.
- This is in addition to the energy savings and potential net metering

Adjustable Block Program

Residential & Small Commercial Solar

Community Solar

Commercial & Industrial Solar

ABP – REC Blocks & Pricing

Long-Term Renewable Resources Procurement Plan August 6, 2018

Table 6-2: Block Group REC Prices ($/REC)[315]

Block Group	Block Category		Block 1	Block 2	Block 3
Group A (Ameren Illinois, MidAmerican, Mt. Carmel, Rural Electric Cooperatives, and Municipal Utilities located in MISO)	Small	≤10 kW	$85.10	$81.70	$78.43
	Large	>10 - 25 kW	$78.70	$75.55	$72.53
		>25 - 100 kW	$64.41	$61.83	$59.36
		>100 - 200 kW	$52.54	$50.44	$48.42
		>200 - 500 kW	$46.85	$44.98	$43.18
		>500 - 2,000 kW	$43.42	$41.68	$40.02
	Community Solar	≤10 kW	$96.12	$92.28	$88.58
		>10 - 25 kW	$87.07	$83.59	$80.24
		>25 - 100 kW	$70.95	$68.11	$65.39
		>100 - 200 kW	$60.47	$58.05	$55.73
		>200 - 500 kW	$55.46	$53.24	$51.11
		>500 - 2,000 kW	$52.28	$50.19	$48.18
		Co-located systems exceeding 2 MW in aggregate size	$47.03	$45.15	$43.34
Group B (ComEd, and Rural Electric Cooperatives and Municipal Utilities located in PJM)	Small	≤10 kW	$72.97	$70.05	$67.25
	Large	>10 - 25 kW	$73.23	$70.30	$67.49
		>25 - 100 kW	$65.61	$62.99	$60.47
		>100 - 200 kW	$53.75	$51.60	$49.54
		>200 - 500 kW	$48.07	$46.15	$44.30
		>500 - 2,000 kW	$44.64	$42.85	$41.14
	Community Solar	≤10 kW	$91.89	$88.21	$84.69
		>10 - 25 kW	$82.82	$79.51	$76.33
		>25 - 100 kW	$66.65	$63.98	$61.42
		>100 - 200 kW	$56.12	$53.88	$51.72
		>200 - 500 kW	$51.09	$49.05	$47.08
		>500 - 2,000 kW	$47.88	$45.96	$44.13
		Co-located systems exceeding 2 MW in aggregate size	$42.59	$40.89	$39.25

Block Category	Block 1	Block 2	Block 3[309]
Small	22	22	5.5
Large	22	22	5.5
Community Solar	22	22	5.5

Block Category	Block 1	Block 2	Block 3[309]
Small	52	52	13
Large	52	52	13
Community Solar	52	52	13

Process to Go Solar

- Do Your Homework
- Schedule a Site Evaluation
- Choose a Contractor
- Sign Interconnection
- Permit completed by installer
- Material Delivery
- Installation

Total Duration: 3-9 months to go solar!

Know Your Usage, Set Your Goals

ComEd

www.comed.com

Customer Service / Power Outage

English
1-877-4COMED1 (1-877-426-6331)

Español
1-800-95-LUCES (1-800-955-8237)

Hearing/Speech Impaired
1-800-572-5789 (TTY)

Your Usage Profile
13-Month Usage (Total kWh)

Electric Usage

Month	kWh
Apr-10	487
May-10	415
Jun-10	220
Jul-10	146
Aug-10	99
Sep-10	125
Oct-10	214
Nov-10	168
Dec-10	337
Jan-11	575
Feb-11	613
Mar-11	362
Apr-11	**321**

Month Billed	Average Daily kWh	Average Daily Temp
Last Year	17.4	48
Last Month	13.2	31
Current Month	**11.1**	**40**

Electric Usage

Month	kWh
Apr-10	487
May-10	415
Jun-10	220
Jul-10	146
Aug-10	99
Sep-10	125
Oct-10	214
Nov-10	168
Dec-10	337
Jan-11	575
Feb-11	613
Mar-11	362
Apr-11	**321**

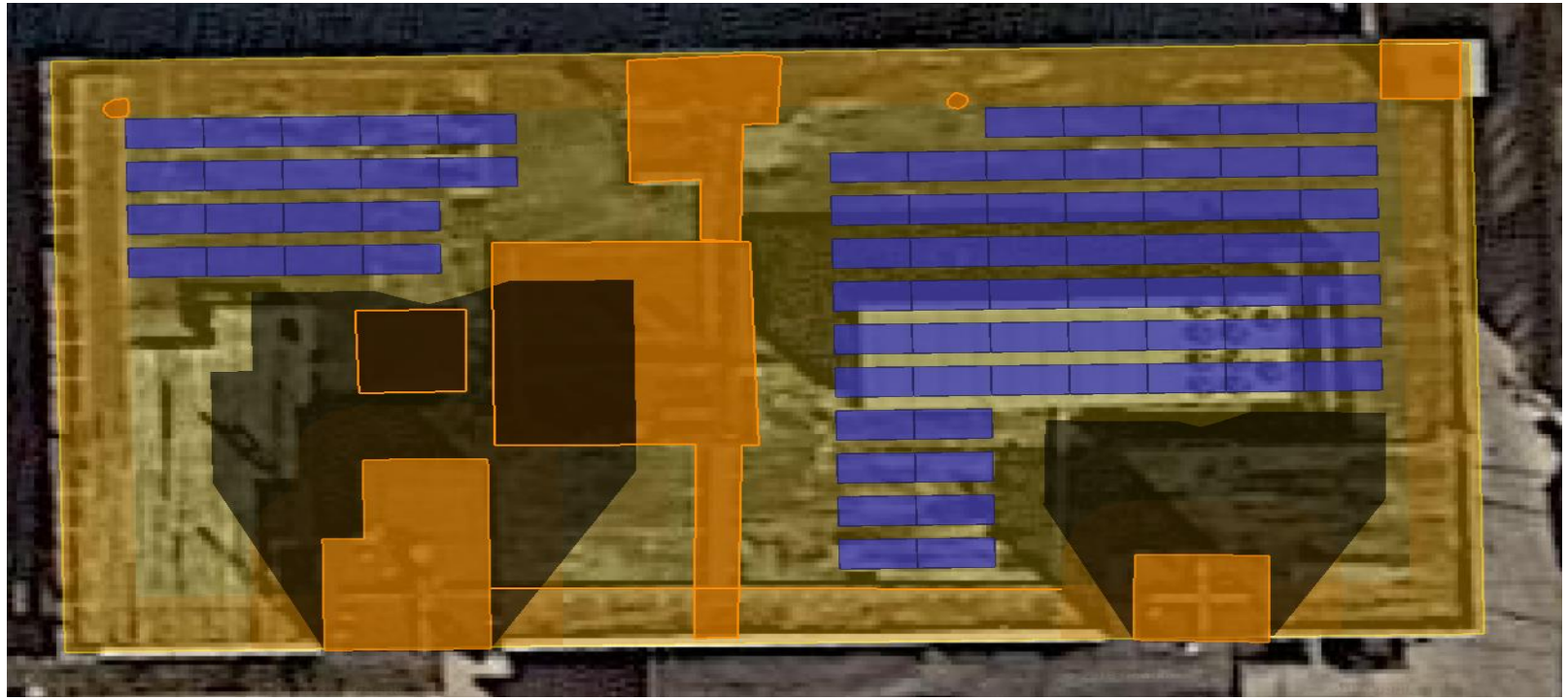
Satellite Imagery

Many Online Tools!

- Google Earth
- Bing Maps
- Google Project SunRoof

Goal is to avoid:

- Drains & Ventilation
- Safety Setbacks
- HVAC Equipment
- Elevator Shafts/shadows
- Many tools can even take measurements!



Timing is Key!

Illinois State Incentives

- Earlier adopters yield higher $/REC
- Need approved interconnection to apply
- Must have site control
- Lottery likely to determine Block 1, 2 or 3 if program is over subscribed

Federal Incentives

- 30% unlimited Tax Credit
- Legislated through 2019, will step down gradually
- 26% in 2020
- 22% in 2021
- 10% in 2022 and beyond (commercial)
- 0% in 2022 and beyond (residential)

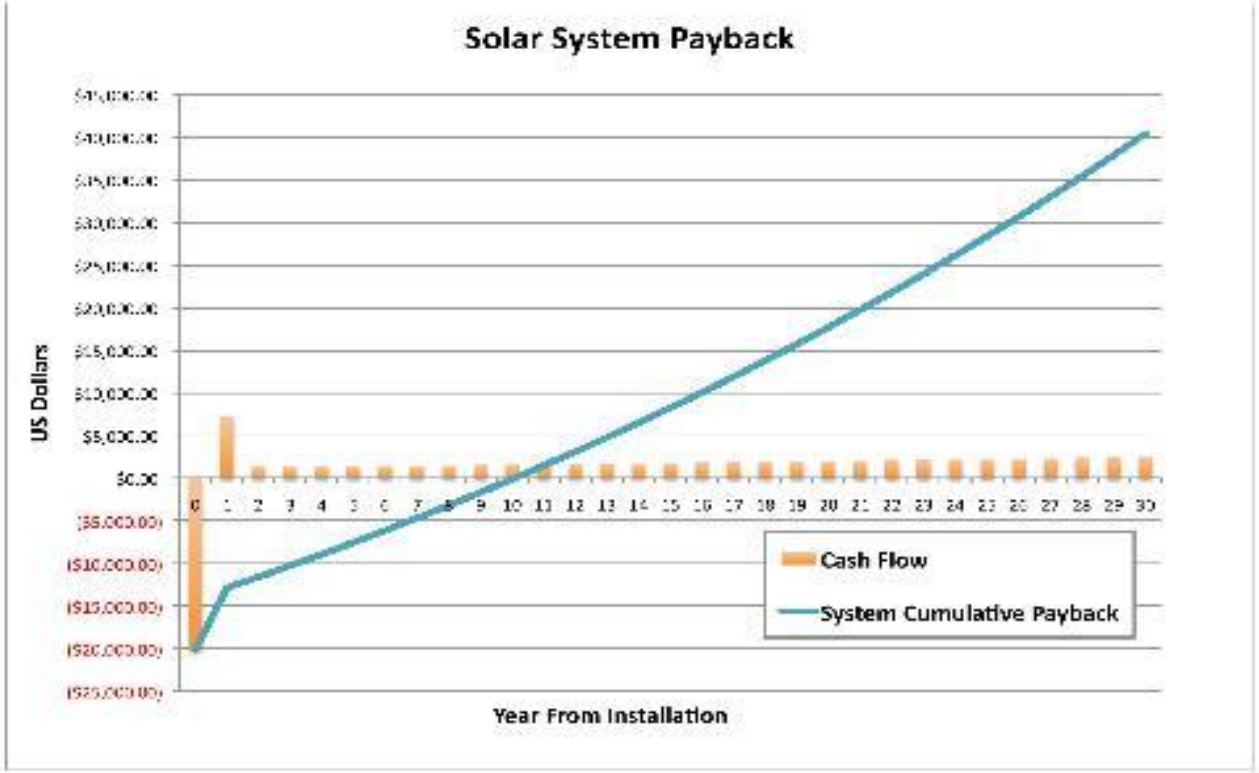
Run The Numbers

Residential Solar

- ~ $15k - $30k before incentives
- 30% FTC
- 30 – 40% REC
- Roughly 7 – 10 year payback
- <$0.05/kWh price of energy

Commercial Solar

- Approx. $2.30 - $2.75/watt
- 30% FTC
- Accelerated Deprecation
- 30 – 40% REC
- Roughly 3 – 6 year payback
- <$0.03/kWh price of energy



2018 Tesla Model X Raffle!

Questions & Contact Info

ISEA

- ✅Website: www.illinoissolar.org
- ✅Email: lesley.mccain@illinoissolar.org

All Bright Solar

- ✅Website: www.allbright.solar
- ✅Email: lisa@allbright.solar

FUTURE
ENERGY JOBS ACT
THE FUTURE ENERGY JOBS ACT
A Win for Illinois' Clean Energy Economy

OVERVIEW

The Future Energy Jobs Act—or "FEJA"—passed the Illinois General Assembly with broad bipartisan support last year. This law provides major benefits to the state of Illinois.

FEJA will pivot Illinois to the new clean energy economy, saving and creating thousands of clean energy jobs and providing job training for the future workforce, while also creating significant consumer and environmental benefits.

EXPANDING RENEWABLES

STRENGTHENED RENEWABLE PORTFOLIO STANDARD

FEJA will jumpstart the growth of renewable energy—like wind and solar—in Illinois through:

- **Strengthening and expanding funding for the Renewable Portfolio Standard by establishing a long-term procurement process, and providing up to approximately $220 million per year in stable, predictable funding for wind and solar development**
- **Implementing four major programs as part of this procurement: long-term wind, long-term utility-solar, adjustable block grants, and low-income solar**
- **Modifying the RPS procurement process to be more regular and certain, while streamlining the way individual customers can take advantage of the benefits of renewable energy credits**
- **Creating a new pathway toward the target of 25 percent of our state's energy coming from renewable sources by 2025**

EXPANDING RENEWABLES

STRENGTHENED RENEWABLE PORTFOLIO STANDARD

Five Major Categories of Renewables:

- **Large Scale Wind developed in Illinois**
  - 2M Recs by 2021; 3M by 2026; 4M by 2031
  - 15 year contracts awarded through an auction run by the Illinois Power Agency
- **Utility Scale Solar developed in Illinois**
  - 1M Recs by 2021; 1.5M by 2026; 2M by 2031
  - 15 year contracts awarded through an auction run by the Illinois Power Agency
- **Rooftop Solar <10kW connected to Illinois Distribution Systems**
  - 333k Recs by 2021; 500k by 2026; 666k by 2031
  - 15 year contracts awarded through adjustable block incentive program paid in year 1
- **Rooftop Solar >10kW and <2MW connected to Illinois Distribution Systems**
  - 333k Recs by 2021; 500k by 2026; 666k by 2031
  - 15 year contracts awarded through adjustable block incentive program paid over 5 years
- **Community Solar <= 2MW connected to Illinois Distribution Systems**
  - 333k Recs by 2021; 500k by 2026; 666k by 2031
  - 15 year contracts awarded through adjustable block incentive program paid over 5 years

EXPANDING RENEWABLES

STRENGTHENED RENEWABLE PORTFOLIO STANDARD

Adjustable Block Incentive Program:

- Illinois Power Agency sets initial block prices and block sizes for each of the DG categories (<10kW rooftop, 10kW – 2MW rooftop and community solar)
- Prices are expected to change overtime based on prevailing economics of solar
  - Declining costs of solar
  - Increase in energy prices
  - Decrease in ITCs
  - Value of DG rebate
- IPA has ability to set the rate of change and adjust prices on an ongoing basis in order to influence the rate of adoption
- All customers who apply for a rec contract within a block get the same price for all years of the contract but have an obligation to produce all recs offered into the contract

EXPANDING RENEWABLES

SOLAR REBATES, NET ENERGY METERING & DISTRIBUTED GENERATION RATES

FEJA also expands renewable energy in Illinois through:

SOLAR REBATES*

- Solar rebates of $250/kW of installed capacity will be made available initially to existing and new commercial customers and community solar subscribers, up to a maximum of 2,000 kW per customer account
- Designed to compensate customers for the value their systems provide to the grid
- Illinois Commerce Commission will set process and methodology for determining rebate value for all customers including residential once 5% cap is passed

NET METERING

- Maintains net-metering for residential customers up to the point when the energy demand of net-metering customers equals 5 percent of utility-supplied peak demand (community solar is energy only – no delivery service credits)
- Once the 5 percent cap is passed, net-metering will apply only to the supply portion of a new solar customers' bill
- All customers who entered into net-metering full retail prior to the 5 percent cap being reached can stay on net-metering for the life of their systems

*Rebate terms apply to other forms of renewable energy, including wind.

EXPANDING RENEWABLES

STRENGTHENED RENEWABLE PORTFOLIO STANDARD

Residential Rooftop Value Streams – Example 5kW System:

- **Federal Investment Tax Credit**
  - 2018 & 2019 = 30% of system cost (~$4,000)
  - 2020 = 26%
  - 2021 = 22%
  - 2022 = 0%
- **Solar Renewable Energy Credit (SREC)**
  - SREC = 1MWh of production
  - 5kW system produces ~6.4 RECs per year and ~92 RECs over 15 years
  - IPA has proposed an initial price of $77 for a system <10kW
  - $77 x 92 = $7,084 pre-tax paid in year 1; SRECs are taxable income
- **Avoided Electricity Costs of ~$750 in year one escalating over time**
- **Typical solar system lasts 25 years**
- **Estimated Payback of 5.5 years (simple payback, undiscounted)**

EXPANDING RENEWABLES

STRENGTHENED RENEWABLE PORTFOLIO STANDARD

C&I Rooftop Value Streams – 400kW System:

- **Federal Investment Tax Credit**
  - 2018 & 2019 = 30% of system cost (~$181,000)
  - 2020 = 26%
  - 2021 = 22%
  - 2022 and beyond = 10%
- **Tax Depreciation – 85% of system cost in year 1 ($181,000)**
- **Solar Renewable Energy Credit (SREC)**
  - SREC = 1MWh of production
  - 400kW system produces ~511.5 RECs per year and ~7,411 RECs over 15 years
  - IPA has proposed an initial price of $48 for a system 200-500kW
  - $48 x 7,411 = $355,700 pre-tax paid in 5 installments of $71,000 over 5 years; SRECs are taxable income
- **DG Rebate of $250/kW = $100,000 in year 1 (requires a smart inverter)**
- **Avoided Electricity Costs of ~$27,000 in year one escalating over time**
- **Estimated Payback of 3.5 years (simple payback, undiscounted)**

ILLINOIS SOLAR FOR ALL

FEJA grows renewable energy through Illinois Solar for All in a way that all communities can benefit:

- **Low-income rooftop solar and community solar are financed with as much as $230 million at the start of the program and later, $10 million per year**
- **Applicants must demonstrate the ability to conduct low-income community-based outreach, education, and recruitment**
- **Utilities like ComEd are able to compete for a low-income solar pilot program of up to $50 million by partnering with a community organization**

EXPANDING RENEWABLES

Four Things We Need To Excel In

Streamlining & Scaling The Interconnection Process

Building the infrastructure that can grow ComEd's ability to serve more solar customers

Supporting Developers

Providing the business tools and resources to make a frictionless developer experience

Educating & Engaging Customers

Explaining and clarifying the benefits of solar, the process to acquire it, and the experience of living with it

Empowering & Rewarding Customers

Creating meaningful moments that engage and enrich all customers and communities

FUTURE
ENERGY JOBS ACT

THANK YOU!

Exelon Generation®

ComEd®
An Exelon Company

CONTINENTAL

ENERGY SOLUTIONS

A DIVISION OF CONTINENTAL ELECTRICAL CONSTRUCTION COMPANY

clarke®

Clarke Environmental Solar

Clarke Environmental Solar

- 149.4 kW PV array
  - Ballasted Rooftop
  - Carport
  - Electric vehicle car chargers
- Grid tied
- SunPower 327W, 360W, and 435W high-efficiency modules
- 200,000kWh of energy/year
- 149 Metric Tons of CO_2 /year
- 1,200 manhours

Clarke Environmental

- Other “green” measures
  - Rainwater collection for irrigation
  - Structural Insulated Panel (SIP) roof and wall construction
  - High R-value windows
  - LED lighting and lighting control
  - “Live wall” air filtration

Environmental Impact

Greenhouse gas emissions from

31.9	**364,812**	**51.9**	**7.4**
Passenger vehicles driven for one year	Miles driven by an average passenger vehicle	Tons of waste recycled instead of landfilled	Garbage trucks of waste recycled instead of landfilled

-or- -or- -or-

CO_2 emissions from

16,748	**162,848**	**2**	**16.1**
gallons of gasoline consumed	Pounds of coal burned	tanker trucks' worth of gasoline	homes' energy use for one year

-or- -or- -or- -or-

www.epa.gov

Environmental Impact

CO_2 emissions from

0.038
Wind turbines running for a year

-or-

22.3
homes' electricity use for one year

-or-

0.812
railcars' worth of coal burned

-or-

4,981
Incandescent lamps switched to LEDs

-or-

345
barrels of oil consumed

-or-

6,085
propane cylinders used for home barbeques

-or-

0
coal-fired power plants in one year

www.epa.gov

Financials

Install cost ($/Watt DC):		$3.25			
System Size (kW DC):		**149.4**	Notes		
Capital Expense		**$485,550**	Turnkey installation cost		
Energy to Grid (yrs. 1-5)	11%	$ 55,465	Energy savings		
Investment Tax Credit (ITC)	30%	$ 134,460	Federal incentive		
Solar Renewable Energy Credits (SRECs)*	30%	$ 144,309	Illinois State incentive		
Bonus Depreciation (2018 Tax Bill)	23%	$ 111,677	Federal incentive		
Smart Inverter Rebate ($250/kW DC)	8%	$ 37,350	Illinois State incentive		
5 Yr. Net Savings	0%	$ (2,290)			
25 Yr. Net Savings	38%	$ 186,291			

IKEA Bolingbrook (1MW) – 4,784 modules

IKEA Schaumburg (750kw) – 3,692 modules

Magid Glove – Romeoville IL 3.46MW

Grayslake High School – Grayslake IL

Abt Electronics (516kW) – 1,564 modules
500kW ESS (950kWh)

Thank you!

Thank You to our Sponsors!

With special recognition to: