



ENERGY EFFICIENCY  
AND ENVIRONMENT



RELIABILITY, POWER  
QUALITY AND SAFETY



ENABLING CUSTOMER  
ACTION



OPERATIONAL  
EFFECTIVENESS

# PEER

Performance  
Excellence in  
Electricity  
Renewal

## Improving Power Efficiency and Environmental Performance

### Leveraging Power Procurement

Presented by John Kelly  
Executive Director, Perfect Power Institute

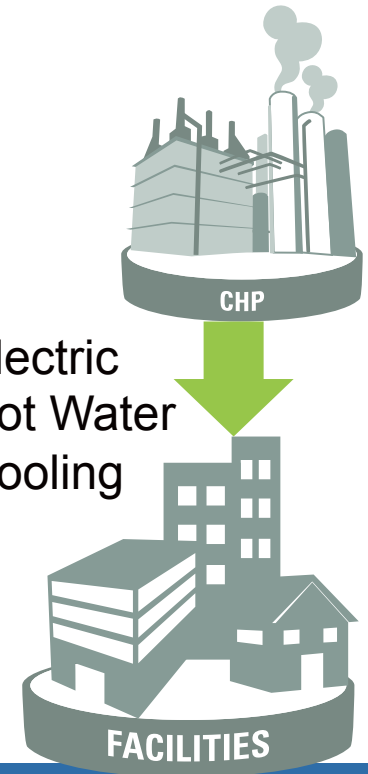
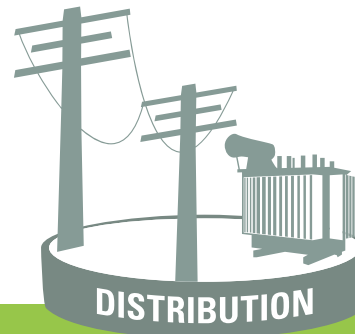
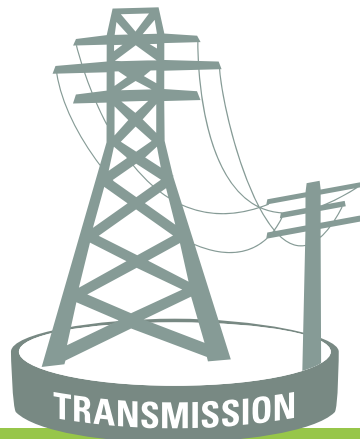
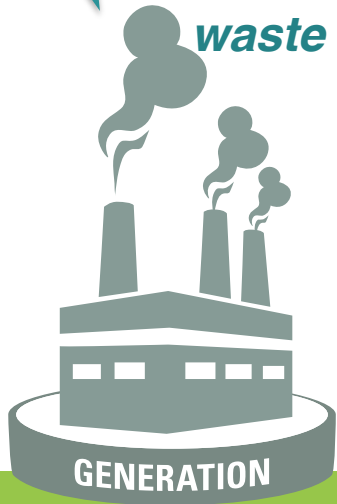


# WHAT IS SUSTAINABLE POWER?

65% of energy lost  
In generation

7% of energy lost  
In delivery

*Significant emissions,  
water use, and solid  
waste*



**PPI PEER™**

**LEED, Energy Star, BPI**

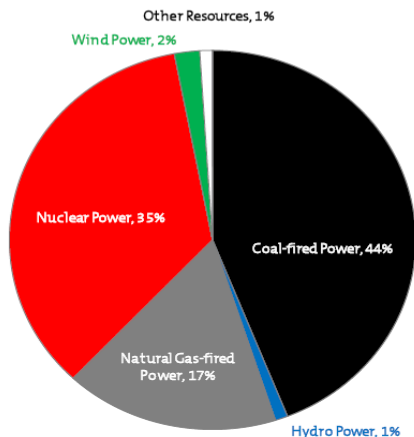
# Illinois Power Content Label



## Environmental Disclosure Statement

The disclosure of this information is required under Section 16-127 of the Electric Service Customer Choice and Rate Relief Law of 1997 and the rules of the Illinois Commerce Commission, 83 Ill Admn. Code 421. The information in this statement shows the breakdown of the different sources of electricity supplied to ComEd customers who have not chosen another retail electric supplier and the estimated amounts of emissions and nuclear waste produced for the period noted.

SOURCES OF ELECTRICITY FOR THE 12 MONTHS ENDING June 30, 2013

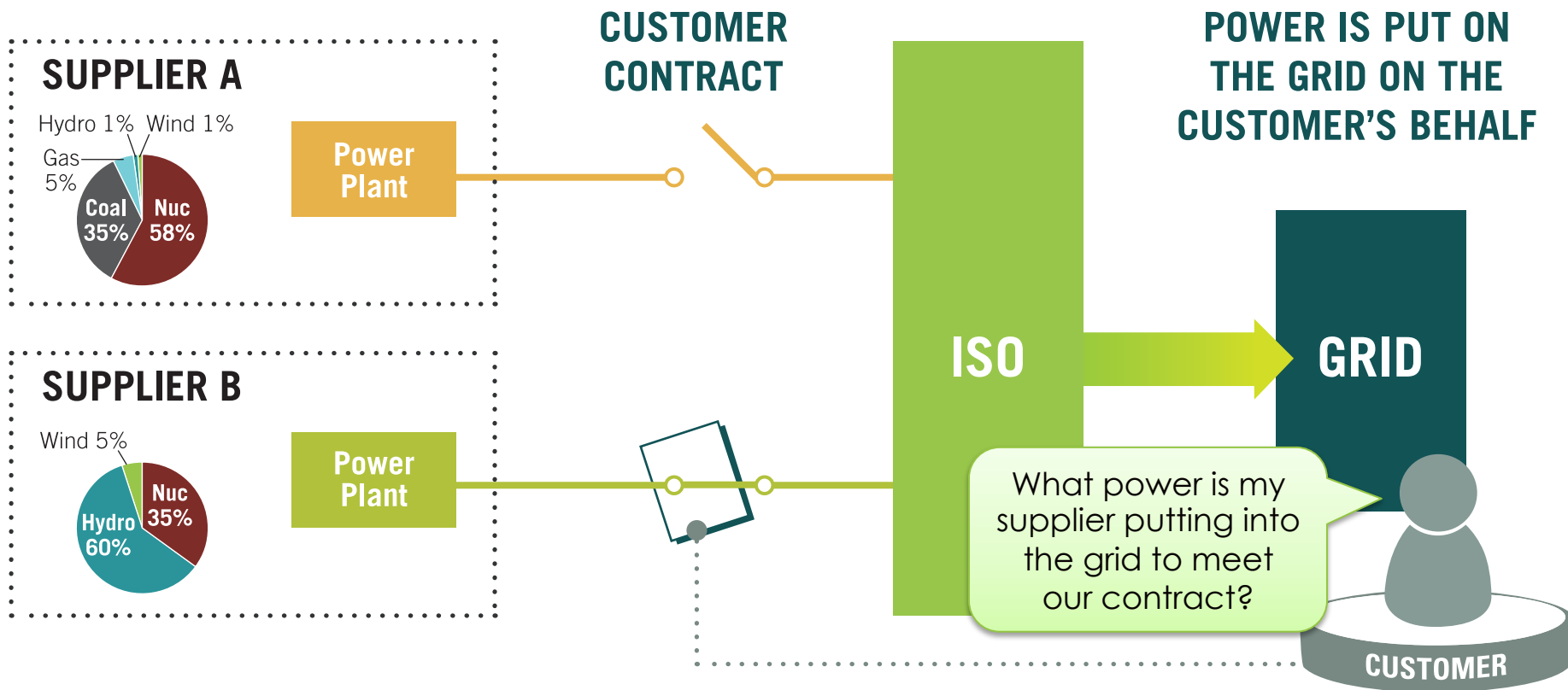


| Sources <sup>1</sup> of Electricity Supplied For the 12 months ending June 30, 2013 | % of Total  |
|---|-------------|
| Biomass Power   | 0%          |
| Coal-fired Power  | 44%         |
| Hydro Power   | 1%          |
| Natural Gas-fired Power   | 17%         |
| Nuclear Power   | 35%         |
| Oil-fired Power   | 0%          |
| Solar Power   | 0%          |
| Wind Power  | 2%          |
| Other Resources   | 1%          |
| Unknown Resources purchased from other companies                                    | 0%          |
| <b>TOTAL</b>  | <b>100%</b> |

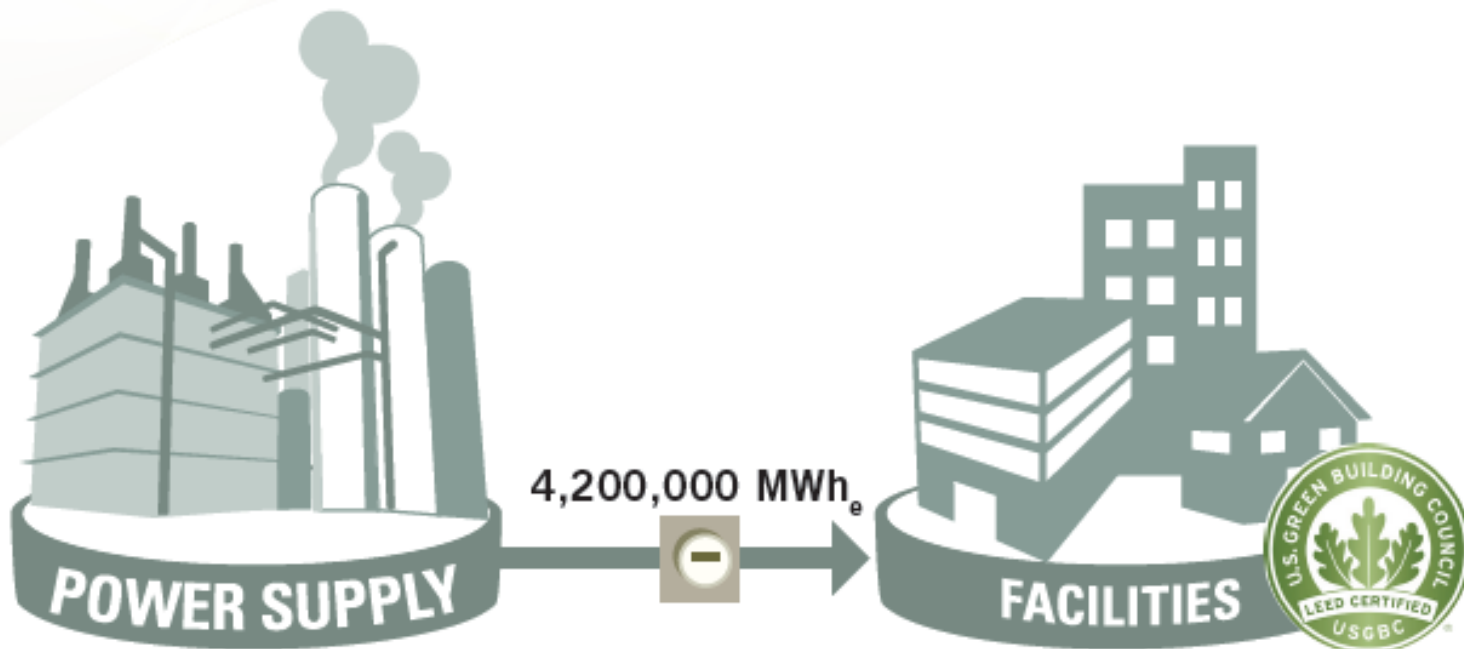
| Average Amounts of Emmissions <sup>2</sup> and Amount of Nuclear Waste <sup>3</sup> per 1000 kilowatt-hours Produced from Known Sources for the 12 months ending June 30, 2013 |                   |
|--|-------------------|
| Carbon dioxide   | 1112.81 lbs.      |
| Nitrogen oxides  | 0.98 lbs.         |
| Sulfur dioxide   | 2.28 lbs.         |
| High level nuclear waste   | 0.006 lbs         |
| Low level nuclear waste  | 0.0007 cubic feet |

| Table X: Base Bid |             |        |
|-------------------|-------------|--------|
| Fuel/Plant        | %           | MWh    |
| Nuclear           |             |        |
| Coal              |             |        |
| CCCT Gas          |             |        |
| Simple Gas        |             |        |
| Renewable         |             |        |
| Hydro High Head   |             |        |
| Hydro Low Head    |             |        |
| Wind              |             |        |
| Biomass           |             |        |
| Solar Thermal     |             |        |
| Solar PV          |             |        |
| PJM ISO           |             |        |
| <b>Total</b>      | <b>100%</b> |        |
|                   |             | \$/MWh |
| <b>REC's</b>      | %XX         | _____  |

# UNDERSTANDING ELECTRICITY PROCURMENT



# Chicago CCA Energy Efficiency Benefit



## ENERGY CONSUMED

**BEFORE** ~ 13,000,000 MWh<sub>s</sub> (SEI 10.5)

**AFTER** ~ **9,200,000 MWh<sub>s</sub>** (SEI 7.5)

**SAVINGS** ~ **3,800,000 MWh<sub>s</sub>**

## SEI RATIO

**3 : 1**

**2 : 1**

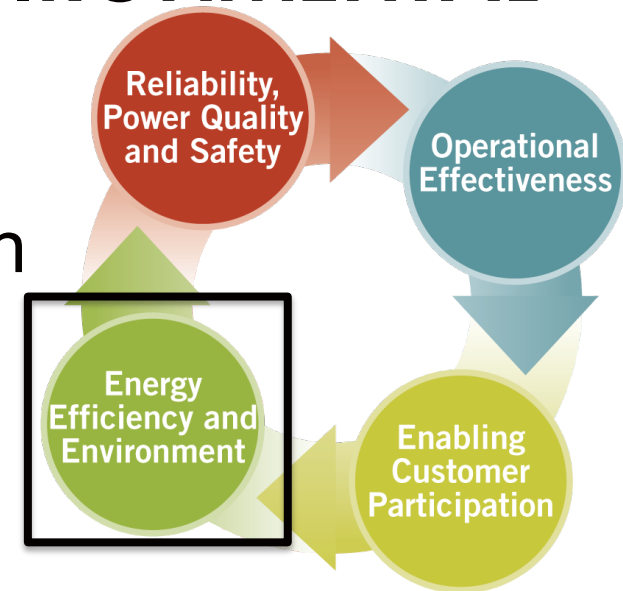
*units of input fuel to deliver one unit of electricity*

SEI Ratio = SEI / 3.4

MWh<sub>Source</sub> = SEI Ratio \* MWh<sub>e</sub>

# ENERGY EFFICIENCY AND ENVIRONMENTAL Performance Criteria

- Efficiency (SEI)      MMBtu/MWh
- Emissions
  - CO<sub>2</sub>e, NO<sub>x</sub>, SO<sub>2</sub>      lb./MWh
- Water      *gal/MWh*
- *Solid Waste*      *% Recycled*



## Capabilities:

- Local clean power (e.g. solar, cogeneration)
- Renewable energy credits, REC's
- Environment improvements (e.g. aesthetics)

# LEVERAGING CONTENT LABEL & PEER

| CCA<br>(Coal/CCCT/Wind)         | PEER™<br>Score | SEI  | Carbon<br>Intensity | SOx  | NOx | Water |
|---------------------------------|----------------|------|---------------------|------|-----|-------|
| U.S. Average                    | 50             | 9.1  | 1,400               | 2.8  | 1.4 | 490   |
| ComEd/IPA<br>( 44% / 15% / 2% ) | 43             | 10.5 | 1,260               | 2.4  | 1.1 | 500   |
| CCA 1<br>( 50% / 25% / 25% )    | 55             | 7.7  | 1,520               | 4.9  | 1.7 | 340   |
| CCA 2<br>( 25% / 50% / 25% )    | 72             | 6.8  | 1,160               | 2.5  | 0.9 | 310   |
| Chicago<br>( 0% / 95% / 5% )    | 77             | 7.5  | 1,050               | 0.01 | 0.2 | 350   |

# Procurement Best Practices

## Phase 1- Renewable and Clean

- Request supplier to provide maximum wind content at low price
- Request power content label per Illinois law and notify suppliers that cleaner, more efficient power mixes will be the deciding factor when bids are similar in price
- Leverage PEER to compare power content label
- Select lowest bid with highest renewable/PEER score

## Phase 2

- Develop solar PV commercial and residential lease program RFP



# RFP Input

## Pricing Worksheet

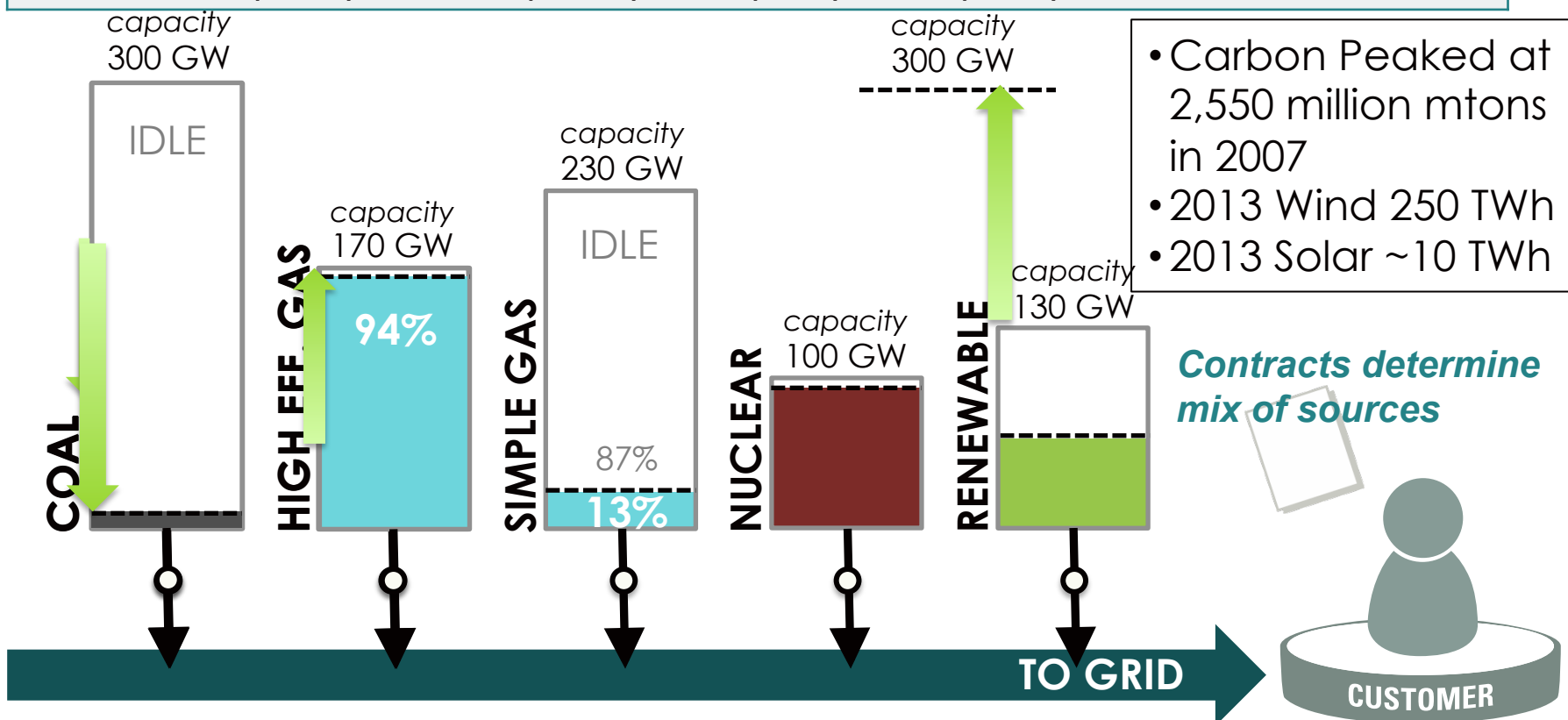
| Price with          | 5% | 15% | 30% |
|---------------------|----|-----|-----|
| Wind – Outside IL   |    |     |     |
| Wind - IL           |    |     |     |
| REC's               |    |     |     |
| Power Content Label |    |     |     |

## Evaluation Worksheet

| Bidder | % Renewable put into grid to meet contract |       | % REC's | More Efficient and Cleaner Power Content |
|--------|--|-------|---------|--|
|        | In-state                                   | Total |         |  |
| A      |  |       |         |  |
| B      |  |       |         |  |

# TRANSFORMING THE US POWER MIX

| Year | Coal     | Gas         | Hydro    | Wind     | Ren | Carbon |
|------|----------|-------------|----------|----------|-----|--------|
| 2011 | -6%      | 3%          | 23%      | 16%      | 13% | 2,300  |
| 2012 | -13%     | 21%         | -14%     | 13%      | 12% | 2,150  |
| 2013 | 71 (+5%) | -112 (-10%) | -7 (-3%) | 35 (16%) | 13% | ~2,200 |



Annual Energy Outlook 2013, Tables, A8, A9, A16

# Renewable Energy Certificates

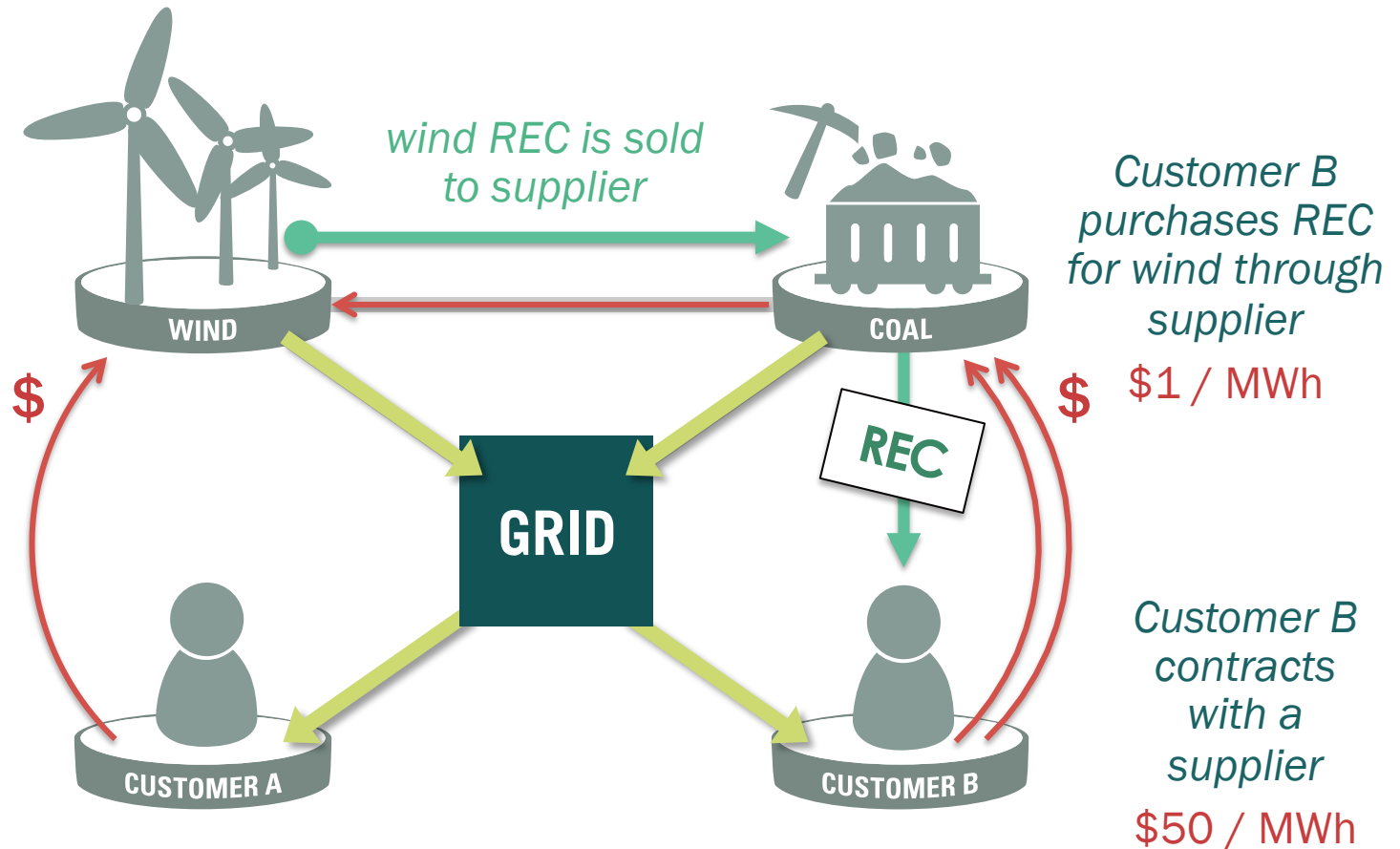
SCORING  
BONUS POINTS

1 POINT



## CRITERIA DEFINITION

Amount of REC generation as a percent of the gross generation



# Restructured Electricity Markets

