City of Cincinnati

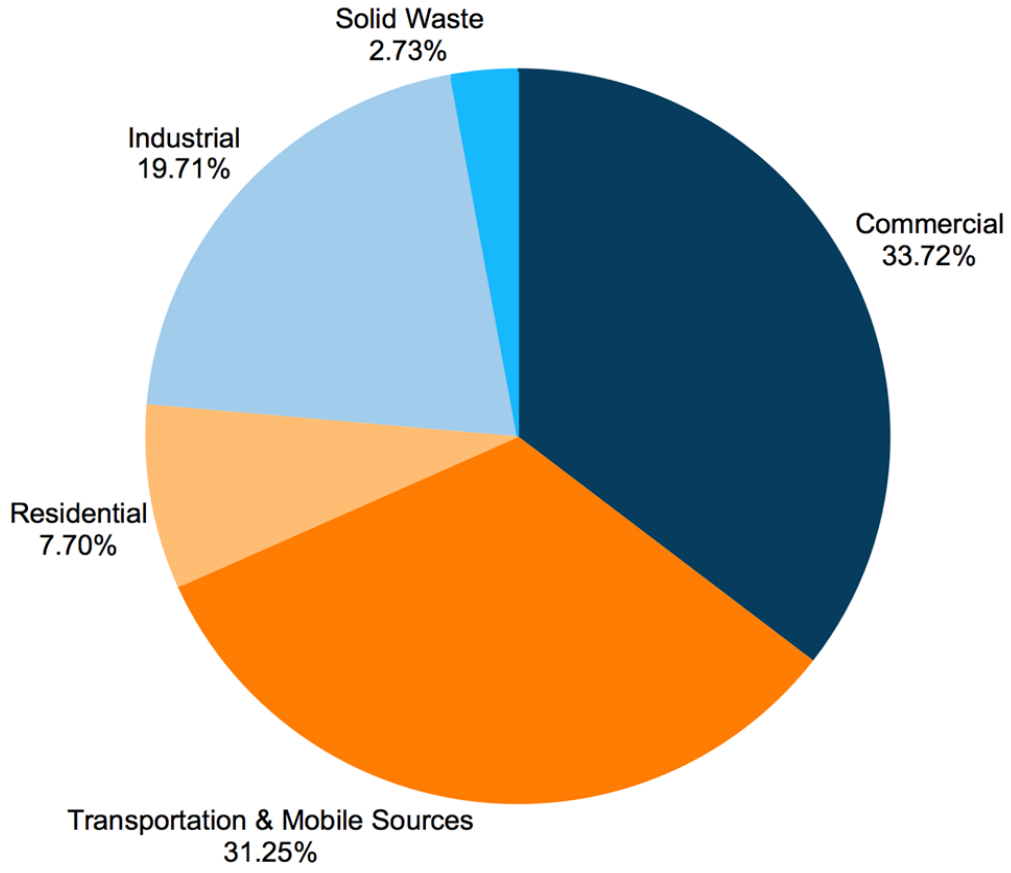
READY FOR 100

City of Cincinnati Sustainability Road Map:

2018 Green Cincinnati Plan – 80 Recommendations to achieve 80% reduction by 2050

- 3rd iteration
- 30 public meetings
- 1400 public comments

Eliminating Greenhouse Gas Emissions

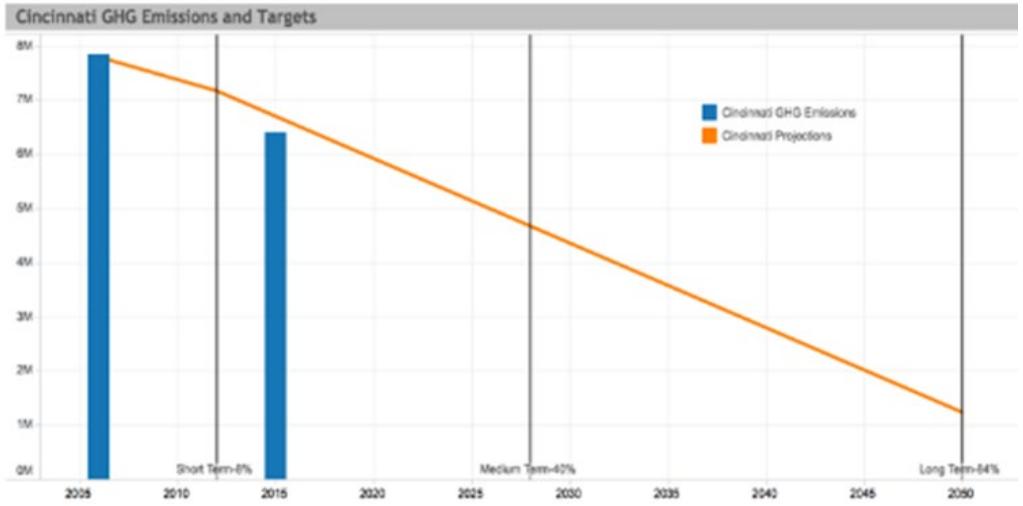


-18.4%

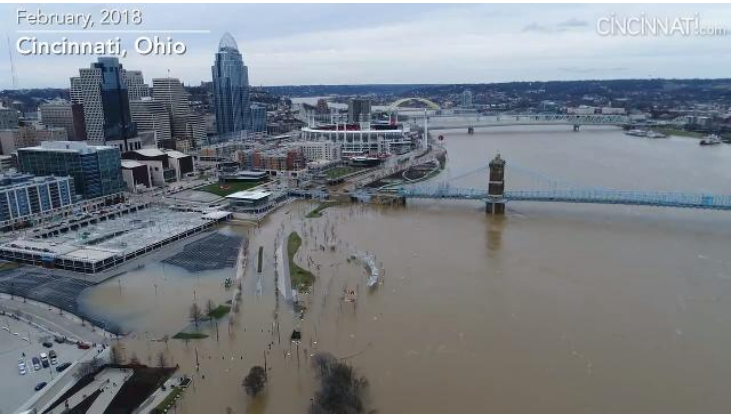
Reduction in Community Carbon Emissions since 2006

-36.3%

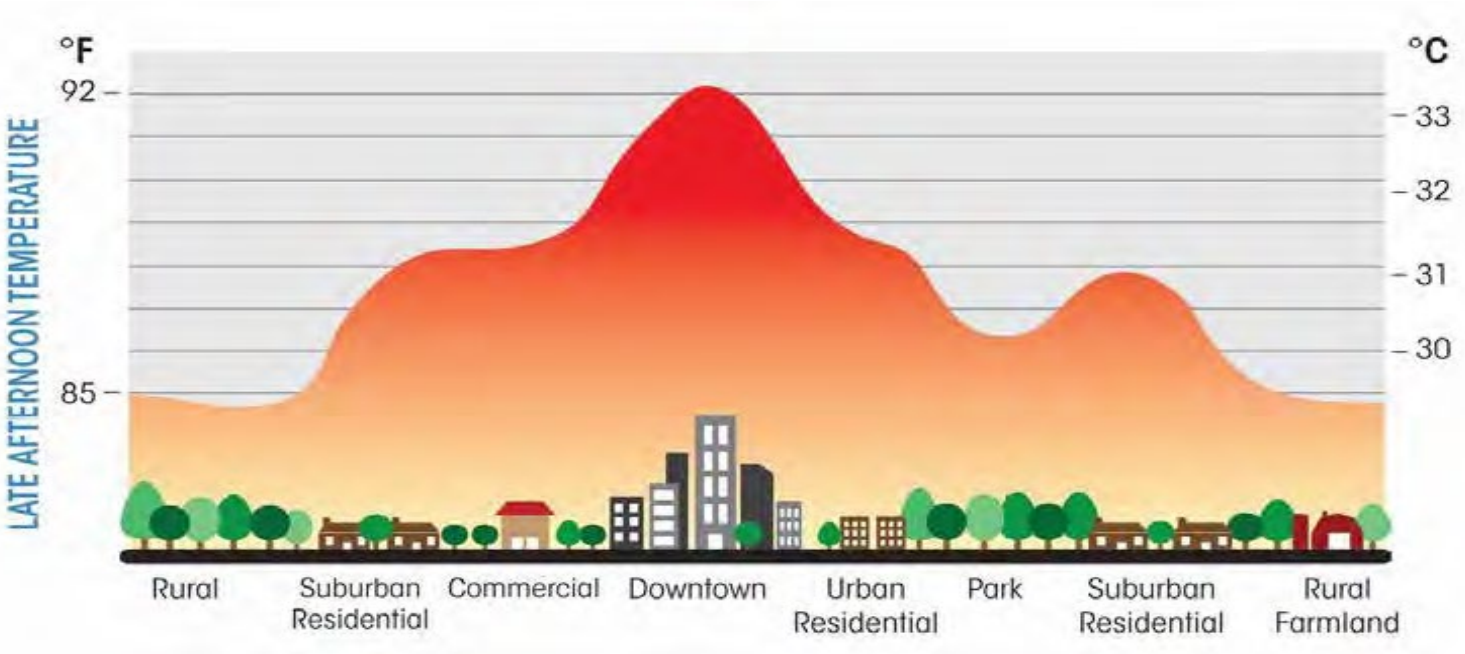
Reduction in Govt. Carbon Emissions since 2006



Why…



We are seeing impacts now



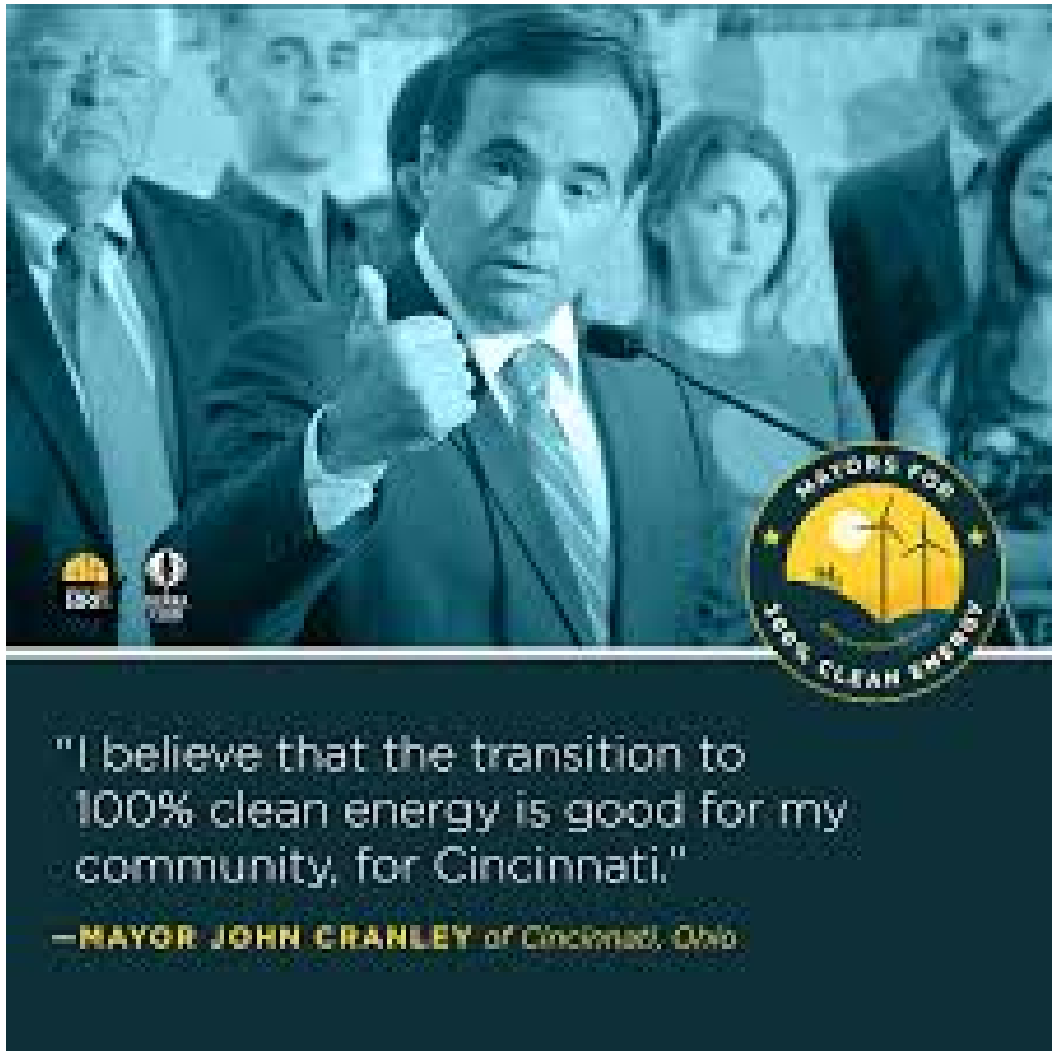
READY FOR 100

Commits the City to 100% renewable energy by 2035 – Different for each City

- 100% Renewable Electricity
- 100% Renewable Natural Gas
- 100% Electrified Fleet

Take Aways:

- Resolution NOT an Ordinance
- Not 100% feasible with current technology
- Signals ambition and direction City staff to begin prioritizing, piloting, and proposing fiscally sound initiatives.



100% Electrification

Initiatives EV on City Fleet:

- Cincinnati has started a pilot EV program for City Fleet
- Conducting fleet wide analysis of potential use
  - EV Light Duty - piloting
  - EV Mowers - piloting
  - Hybrid Police Vehicles – FY20
  - Idle reduction technology - piloting
  - EV Trash Trucks – researching

Public Charging Infrastructure:

- Parking EV Make Ready Ordinance
- Aligning Private Business – Cincinnati 2030 District
- VW Emissions Grant $
- Utility Incentives

100% Renewable Energy in Cincinnati:

Where We've Been:

- 28 renewable installations
- 1st net-zero police station
- City facilities are 100% green electricity
- 1st large City to offer 100% Green Energy CCA
- Residential Solarize Cincinnati Program

Background:

Megawatts (MW) represent the *rate electricity is consumed or generated at a point in time*. 1 MW=1000 Kilowatts (KW)

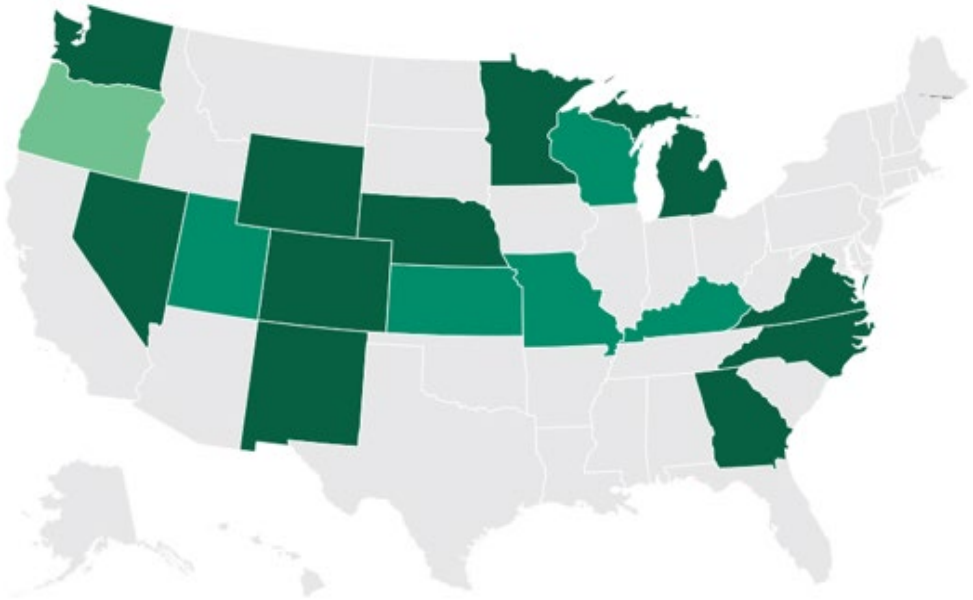
Example: The City of Cincinnati's total electricity demand at noon today is around 35 MW. Our solar field could generate 35MW at a point in time to meet that demand.

Megawatt-hours (MWh) represent an *amount of energy over time*. 1 MWH = 1000 kilowatt hours(KWH) (what you see on the utility bill)

Example: The City of Cincinnati's annual energy consumption is 294,000 MWh. A 35 MW solar field will generate around 71,000 MWh per year with trackers.

20 MW solar field in Bowling Green, Ohio produces approximately 40,000 MWH of electricity on 165 acres

Vertically Integrated Utility Vs Retail Choice

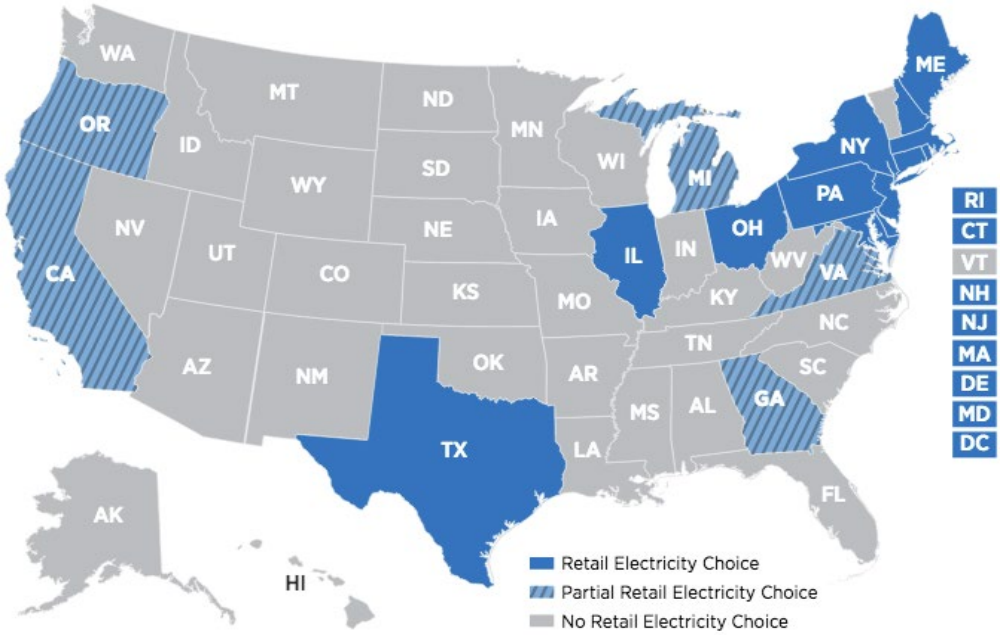


Utility Renewable Energy (RE) Deals

Green tariff(s) and executed RE deal(s) through tariff

Green tariff(s) but no deal(s) through tariff to date

Considering a green tariff (proposal with the PUC)

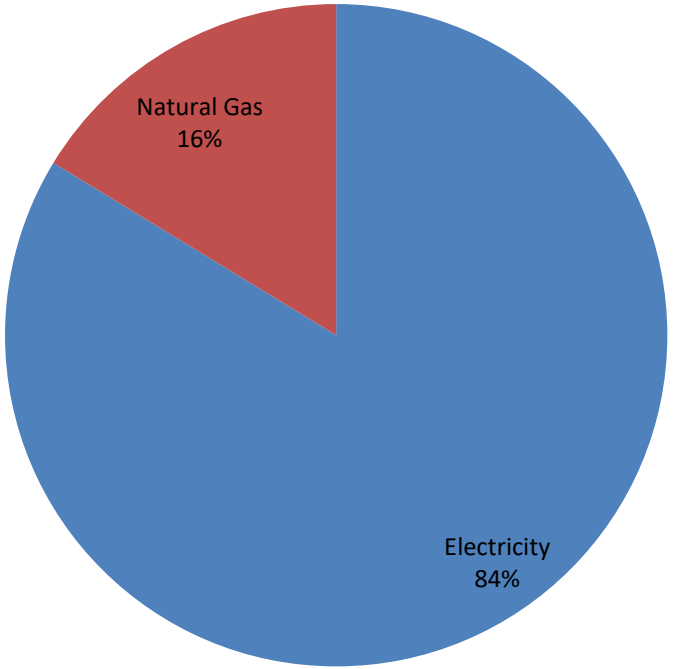


City Energy Consumption & Cost

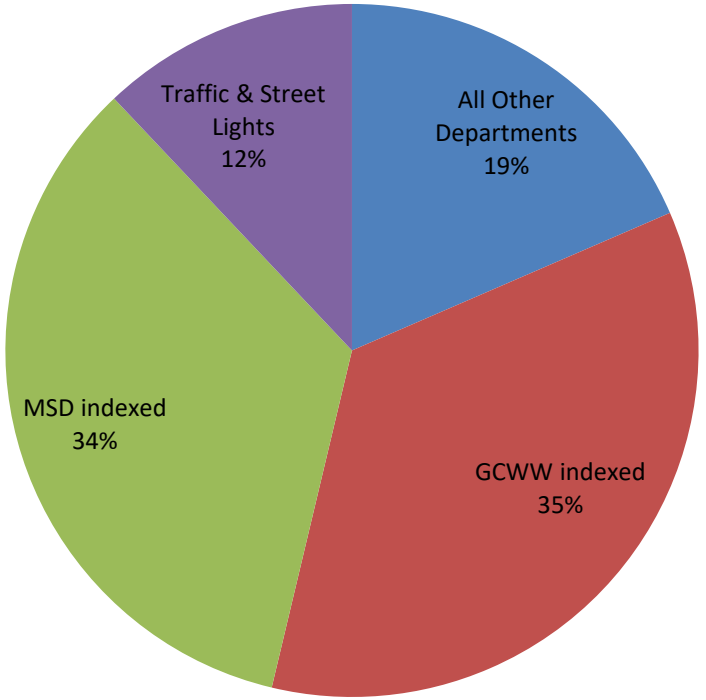
- 150 Natural Gas Accounts
  Annual Usage ~ 4,927,000 ccf
  Annual Spend ~ $3 Million

- 584 Electric Service Accounts
  Annual Usage ~ 294,000,000 KWH
  Annual Spend ~ $19 Million

- Annual city expenses for energy exceed $22 Million



Spend by fuel type



Electricity Spend by Department

Cincinnati Solar Project Goal:

- Utilize the City of Cincinnati's annual electricity purchase to install renewable energy at no additional cost to the taxpayer.
- Secure a long-term budget hedge to protect the City from energy market price fluctuations.
- Provide local solar energy to residents

Outcome -. Construction of a 35 MW of solar to serve City of Cincinnati's electricity load and another 65 MW to serve the Cincinnati Electric Aggregation load that:

- Reduces the City of Cincinnati's carbon footprint
- Serves as a budget hedge for City Operations
- Creates jobs/economic impact for Greater Cincinnati
- A 3rd party ownership model –Power Purchase Agreement that utilizes available incentives with a 20-year term - Offeror will be responsible for all operation and maintenance
- The City will be able to claim additionality and the environmental benefits from the system

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Power Purchase Agreement

A long-term contract to purchase the generated electricity at a fixed price with no upfront costs to the City

1. The city signs a physical PPA with a project developer for a fixed price

3. The renewable energy delivered offsets a portion of the electricity the customer would need to buy from the energy market

$ / MWh

Cincinnati

$

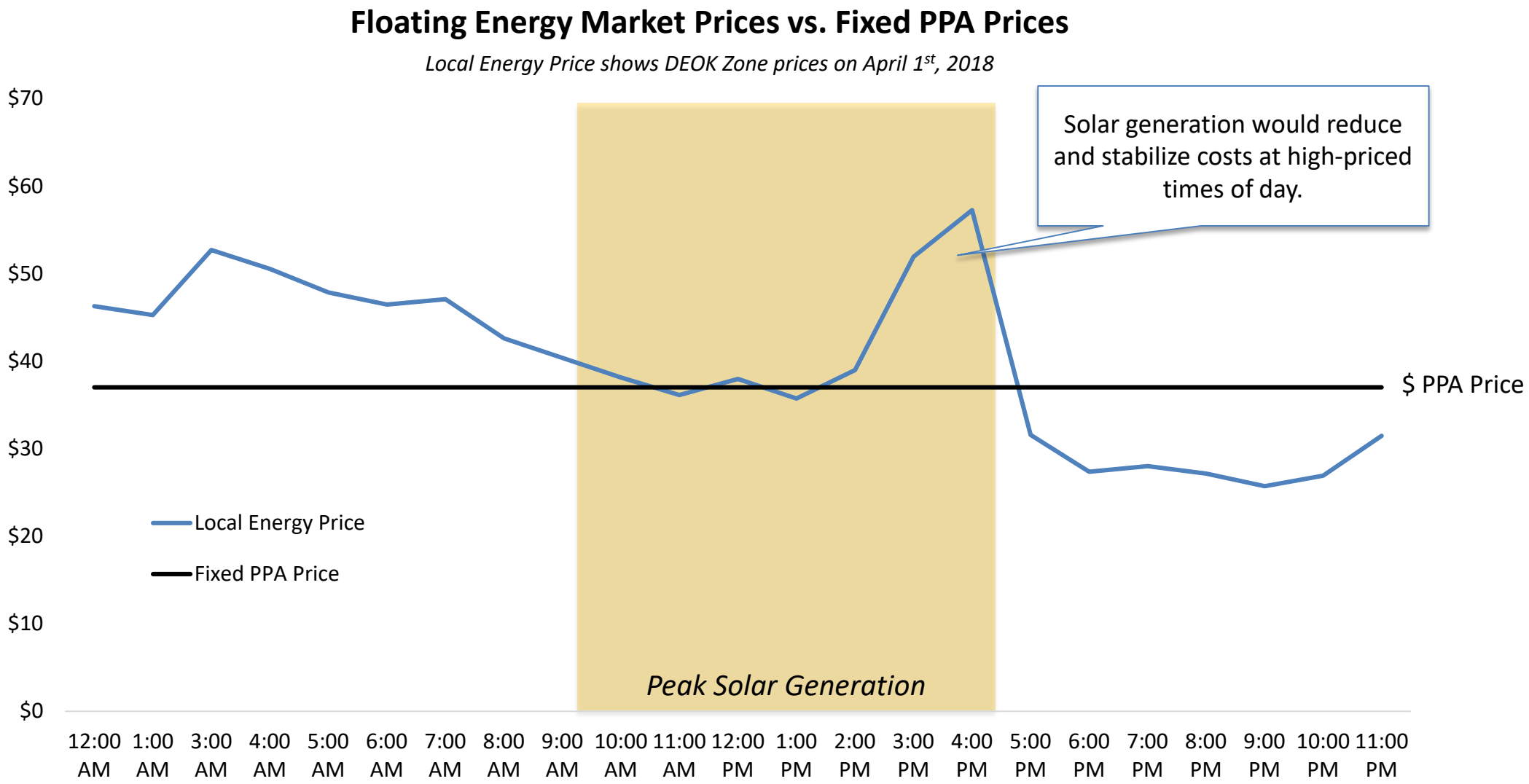
RECs

2. The developer is responsible for delivering the electricity from the renewable plant to a predetermined “delivery point”, at which point the city or the city’s retail provider takes physical delivery of the energy

Developer / Renewable Generator

Grid / Electricity Market

Using a PPA as a budget hedge – offset higher priced energy with low cost solar



Project Description:

- 1000 Acres
- 310,000 solar panels
- 38 miles from Downtown

Environmental Benefits

Equivalent removal annually of:

- 30,500 vehicles from the road
- 25,000 homes electricity use
- 332,000 barrels of oil
- 158,340 tons C02

Fiscal Benefits

- Fixed price on peak electricity for 20 years
- Local economic development
- Local tax revenue
- Estimated total savings ~ 2 million over term

Current view of site

Current Timeline:

- October 2019 - contract signed
- May 2020 – Rooftop installations completed
- September 2020 – Construction begins
- December 2020– 1st 20 MW of solar delivered
- March 2021 – 15 MW of solar delivered (35 MW total)
- December 2021 – 100 MW of solar delivered

Questions?

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