

A large field of solar panels stretches across the foreground, receding into the distance. The sky is a mix of blue and orange, suggesting a sunset or sunrise. The sun is visible on the left side, creating a bright glow and lens flare effect. The panels are arranged in a grid pattern, and the perspective is from a low angle, looking across the field.

# **AN INTRODUCTION TO VIRTUAL POWER PURCHASE AGREEMENTS**

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# Agenda

1. Why We Are Here Today
2. Introduction to a Virtual Power Purchase Agreement
3. Role for Virtual Power Purchase Agreement in the City's Clean Energy Portfolio
4. Looking Ahead

# Commitments to Clean Energy

1. 2017-2019 City Council Goals
2. Climate Action and Adaptation Plan
3. Carbon Neutrality Plan

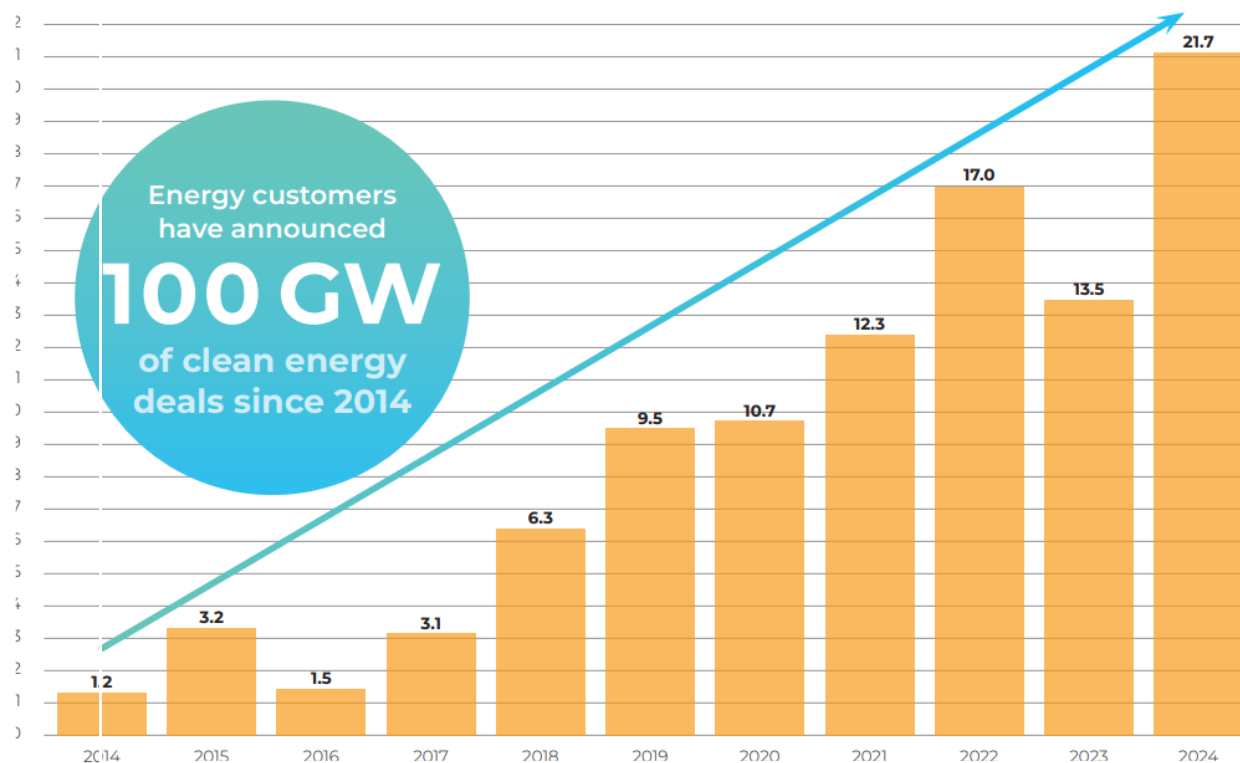
## Supporting Clean Energy Goals

There are several models to support clean energy goals

1. City-owned/Lease to Own
2. Power Purchase Agreement
3. Renewable Energy Credits
4. Virtual Power Purchase Agreement
5. Future innovation?

# An Introduction to Virtual Power Purchase Agreements

## CEBA DEAL TRACKER



Energy customers have announced **100 GW** of clean energy deals since 2014

As of December 2024. Includes publicly announced corporate clean energy procurement through power purchase agreements, green tariffs, tax equity investments, and direct and project ownership in the U.S. From 2014-2024. Excludes onsite generation <20 MW.

Virtual power purchase agreements (VPPAs) are becoming an increasingly popular way for organizations to achieve their clean energy goals and stabilize pricing.

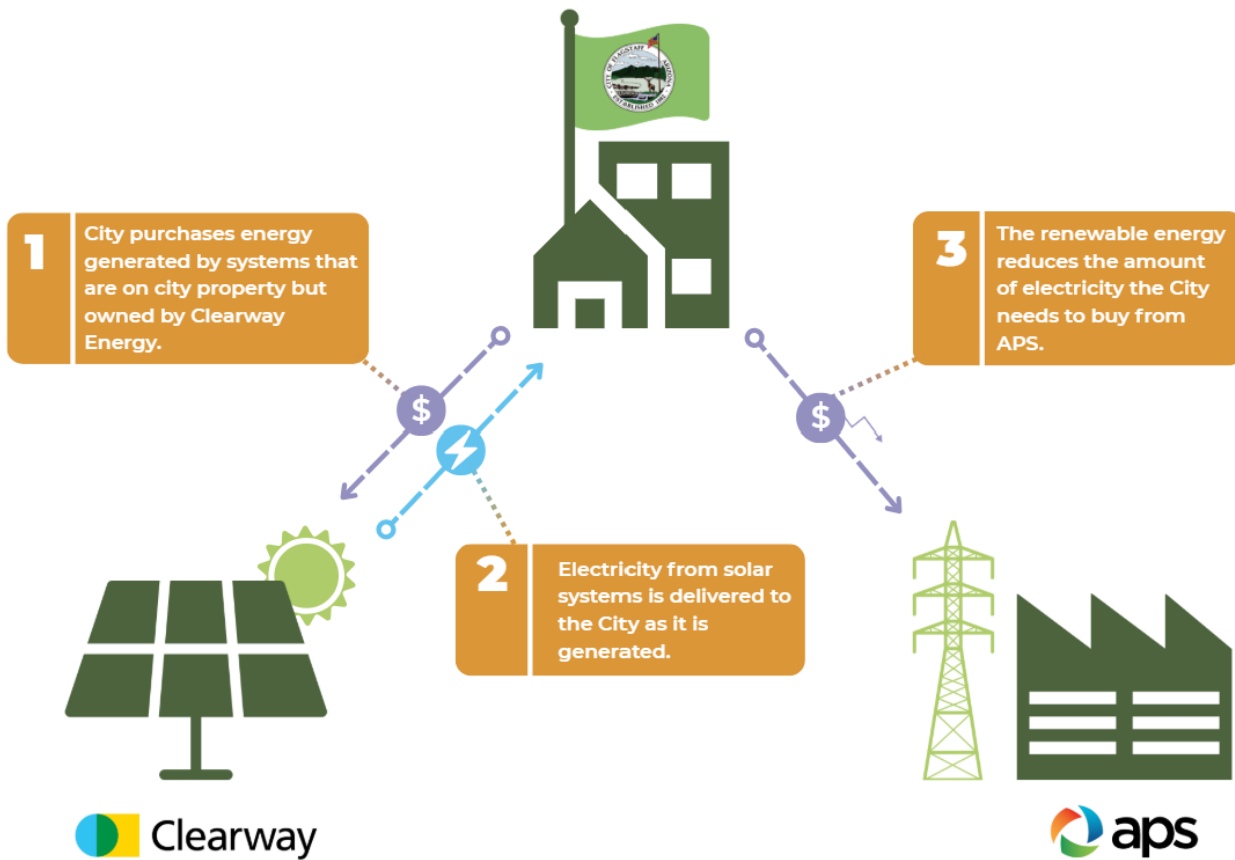
But before we explore the VPPA model...

# First Let's Discuss Power Purchase Agreements

A power purchase agreement (**PPA**) is an energy contract between an energy buyer and a clean energy project developer. The buyer guarantees the purchase of the energy sold from a new renewable energy project for a fixed price. Typically, the buyer has available land to host a project, which is used to "anchor" a fixed price. PPAs normally span 10-25 years.

The City is in a PPA contract. Clean energy systems are located at the Aquaplex, City Hall, and Wildcat Wastewater Treatment Facility.

# First Let's Discuss Power Purchase Agreements



## 2011/2012 City PPA:

Aquaplex (roof mount)

93.5 Kilowatts

\$0.115 /kWh (APS ~\$0.138/kWh)

City Hall (parking canopies)

201 Kilowatts

\$0.124/kWh (APS ~\$0.149/kWh)

Wildcat (tracker ground mount)

568 Kilowatts

\$0.103/kWh (APS ~\$0.122/kWh)

# Why a Power Purchase Agreement?

Price stability: PPAs lock in the price of electricity, providing stability and reducing the risk of price fluctuations

Long-term commitment: Agreements are typically long-term, which helps to mitigate risks associated with short-term market volatility

Reduces risk: The buyer holds little liability (performance, credit, and market)

Direct relationship with supplier: PPAs provide a direct relationship between the buyer and the power producer, reducing the risk of supply disruptions.

New clean energy: Provides a low-risk pathway to bring new systems online.

# An Introduction to Virtual Power Purchase Agreements

With a PPA, the buyer purchases clean energy at a specified delivery point, such as the buyer's source of need (meter), or it can be sent to the grid.

With a **virtual** power purchase agreement (**VPPA**), the energy doesn't physically flow from the project to the buyer. Rather, energy is sold on the wholesale electricity market at a defined location.

A VPPA can be used for energy production or the purchase of Renewable Energy Credits (RECs) to achieve clean energy goals.

# Why a Virtual Power Purchase Agreement?

They expedite the development of utility-scale renewable energy projects in areas outside the buyers' region to promote cleaner electricity generation, reduce air pollution, and spur economic development

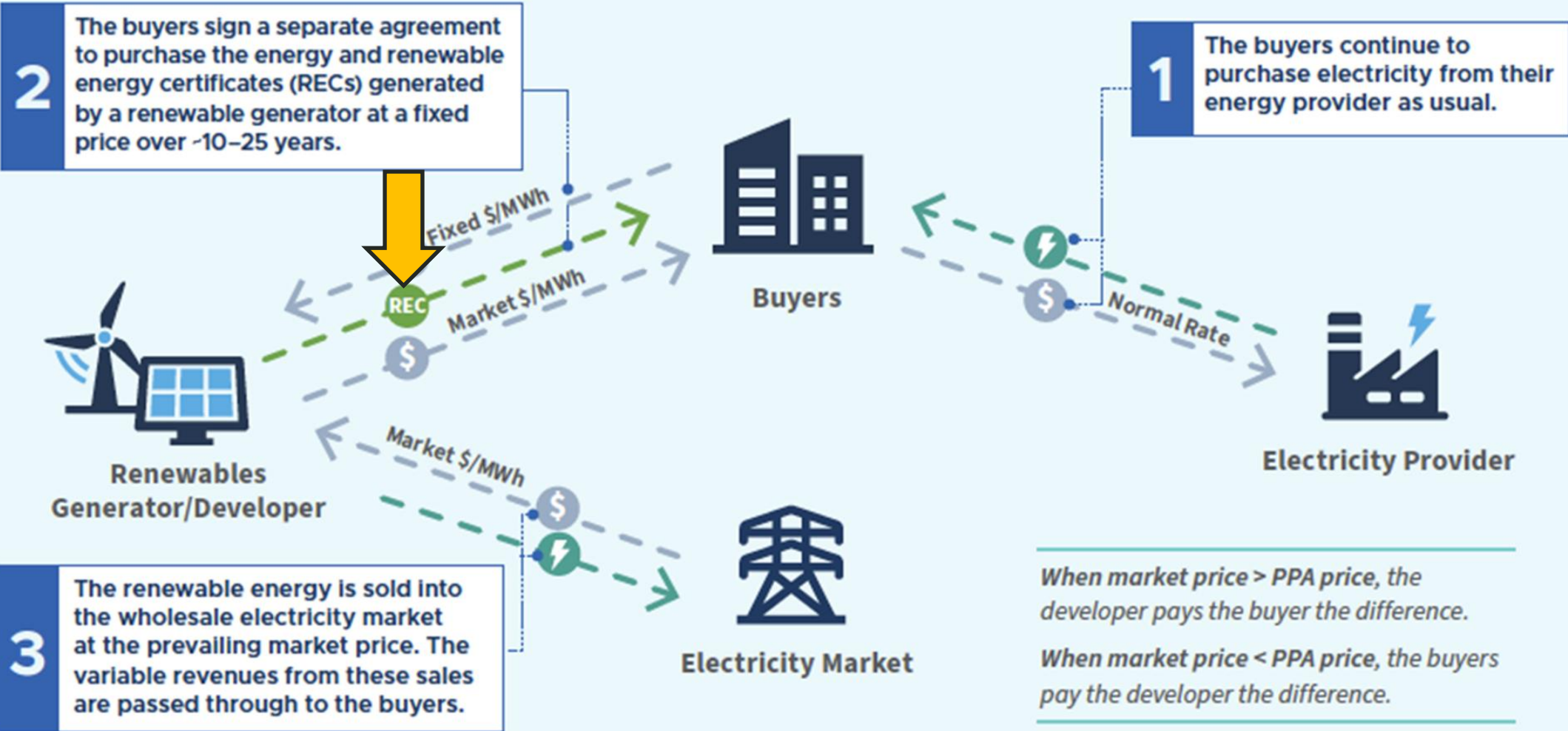
**New Clean Energy on the grid:** Cleaning the grid and decreases carbon emissions

**Price stability:** VPPAs lock in the price of renewable energy credits (RECs), providing stability and reducing the risk of price fluctuations

**Economy of scale:** VPPAs allow a consortium of buyers to negotiate better rates and legal costs

**Long-term commitment:** Agreements are typically long-term, which helps to mitigate risks associated with short-term market volatility

# Mechanics of a Virtual Power Purchase Agreement





# Role of a Virtual Power Purchase Agreement

In simple terms, this VPPA project focuses on purchasing Renewable Energy Credits (RECs) at the most competitive rates to offset remaining non-renewable municipal energy use. It also supports new clean energy projects in a cost-competitive manner.

# Risk with a Virtual Power Purchase Agreement

While a VPPA will yield a fixed price for clean energy RECs, there are risks:

**Complex initial agreements:** Multi-agency agreements can add complexity

**Monthly price fluctuation:** Clean energy is sold on the open market which can lead to varying prices month to month, but will average out over the fiscal year

**Staff oversight:** After the negotiation phase, a VPPA will require oversight and monitoring

# Role of Virtual Power Purchase Agreements



How does a Virtual Power Purchase Agreement Achieve the City's Clean Energy Goals?

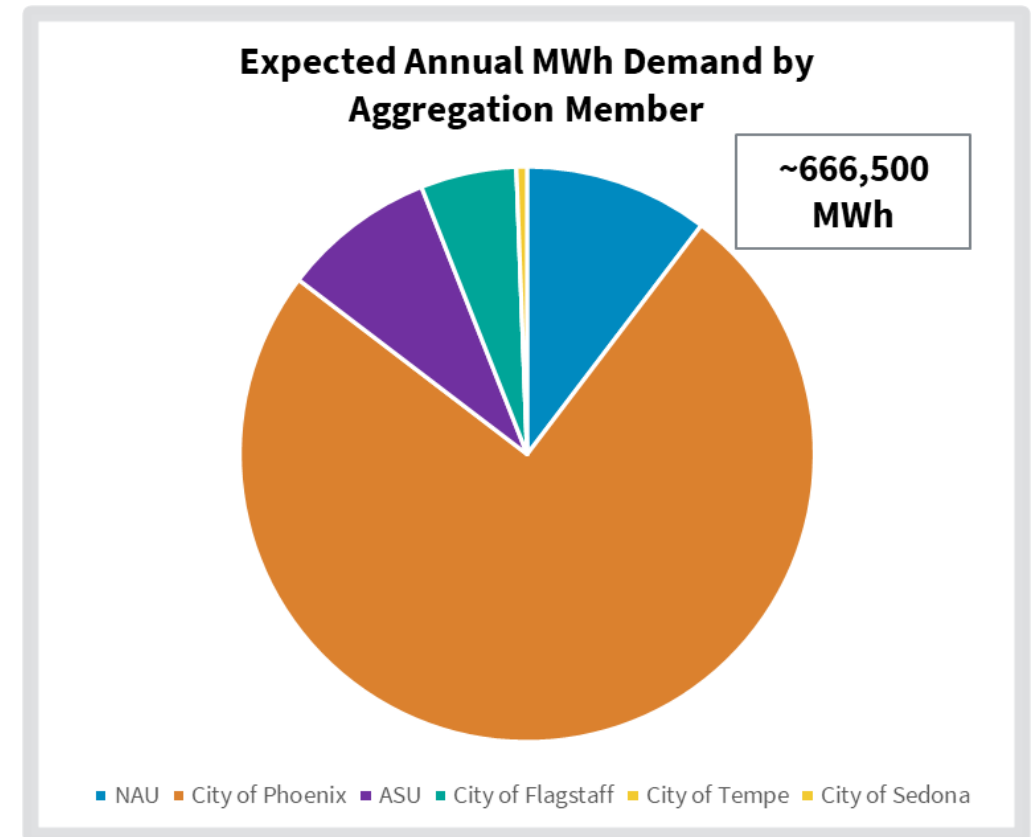
# The City's Current Clean Energy Portfolio

Diversified Portfolio	Agency	Contract	~Annual Energy Yield/RECs (MWh)	~ Annual Operational Savings
1) Arizona Power Authority (Hoover Dam) Schedule D	APA	2057	850	\$38,450
2) APS Green Power Partners (GPP)	APS GPP	Monthly	36,000	-\$96,850
3) CoF Owned	CoF	Financed through 2029	1,300	\$32,740
4) PPA	PPA	2031	1,500	\$32,880

# The Arizona Consortium

The Arizona Consortium comprises of Arizona State University, the City of Flagstaff, Northern Arizona University, the City of Phoenix, the City of Sedona, and the City of Tempe.

NAU has been leading this effort for the last two years. They've hired consultants (Usource) to advise the consortium and oversee this VPPA initiative.





# Why a Consortium?

The consortium approach is favored for two key reasons:

**Value in a Joint Effort:** Leverages economies of scale and increases options for stronger pricing.

**Limited Options in Arizona:** Arizona is a regulated electricity market and there are fewer viable options for clean power procurement than in other states. This increases the need for creative, collaborative thinking to engage the wholesale market and our utilities.

# An Introduction to Virtual Power Purchase Agreements

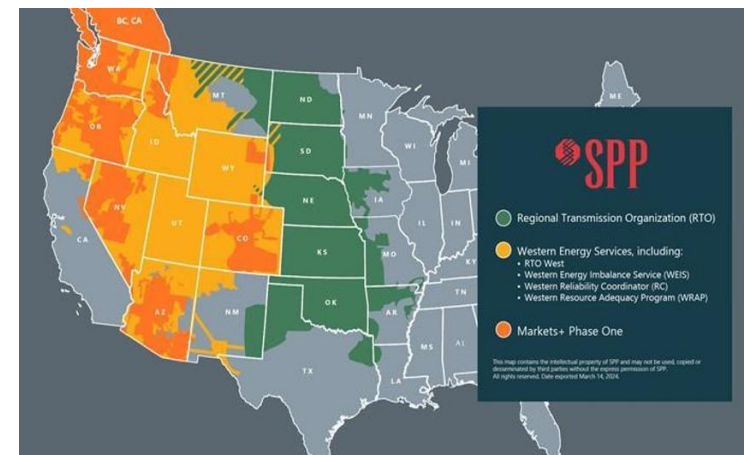


This 200-Megawatt solar installation in Bell County, Texas is one of the renewable energy projects a Boston-area Virtual Power Purchase Agreement consortium supports.

# Looking Ahead

On October 7<sup>th</sup> staff will present an Intergovernmental Agreement (IGA) for consideration. The IGA will authorize NAU to issue a non-binding solicitation on behalf of the consortium to procure price competitive RECs:

1. Prioritize regional participation from **APS/SRP**
2. Open to national wholesale energy markets, favoring Southwest Power Pool.





VPPA/Utility Steps	Date
IGA Final to parties	July 22nd
IGA Approval by parties	September/ October
Pre-RFP Criteria. Develop RFP language, Developer outreach list	End July-August
Finalize RFP specs	Early-mid Oct
Issue RFP to developers	Mid/late Oct
Engage APS with Consortium request	Mid/late Oct
NOI to bid	One week of issuance
Developer/Utility responses (50-100 responses)	Mid -Nov
Response analysis	3-4 weeks Mid Dev
Short list review .Interviews, Request term sheet or send ours, Best and Final	3-4 weeks
Decision on final project—NOI to award	Mid January
Term Sheet and LOE. Preliminary redline, Finalize terms, Sign to negotiate	March 2026
PPA/utility negotiation (ideally 95% aligned parties)	July 2026
Approve and Sign. Party approvals	August 2026
Operational Project and REC delivery	2027-2028

# QUESTIONS?

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