



Inland Empire Utilities Agency

A MUNICIPAL WATER DISTRICT

SCAP ENERGY MANAGEMENT COMMITTEE

Renewable Energy Sources: Wind Power

PRESENTED BY:

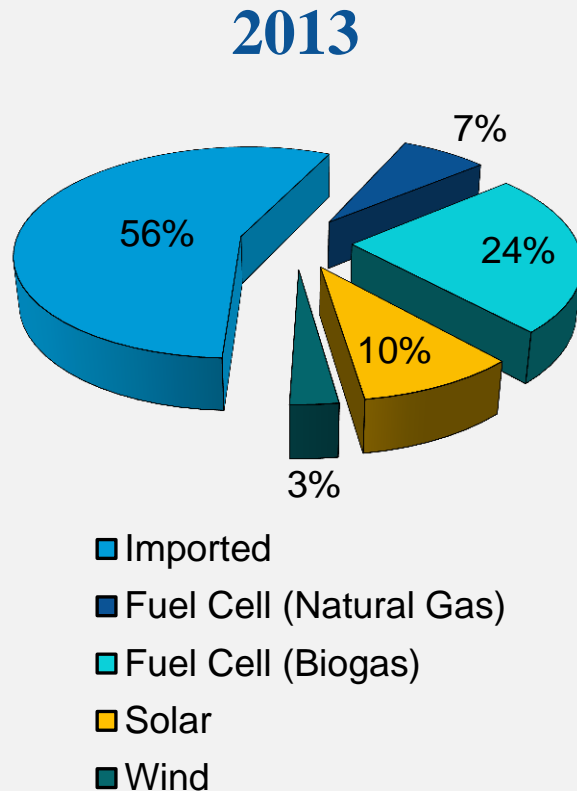
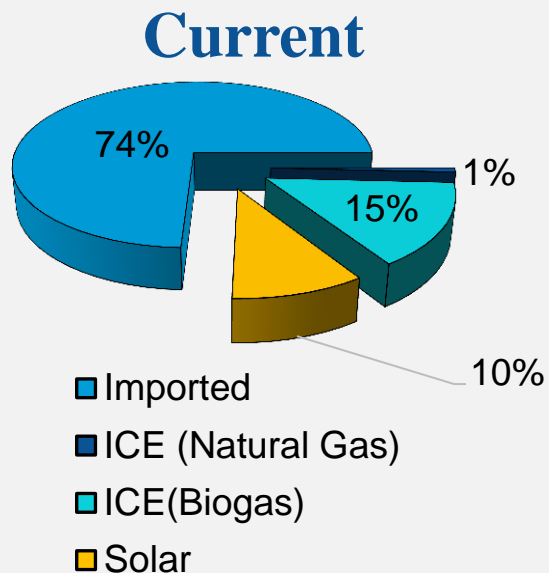
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**SENIOR ENGINEER-INLAND EMPIRE
UTILITIES AGENCY**

BACKGROUND

- IEUA has been considering the benefits of providing clean and renewable energy with potentially more valuable green attributes which IEUA can use to offset other high-Carbon emitting operation.
- IEUA analyzed the technical feasibility of utilizing on site power generation systems for the following reasons:
 - 1) Low cost per kilowatt hour
 - 2) Environmentally friendly
 - 3) Reliability with minimal maintenance.

Agency-Wide Energy Portfolio

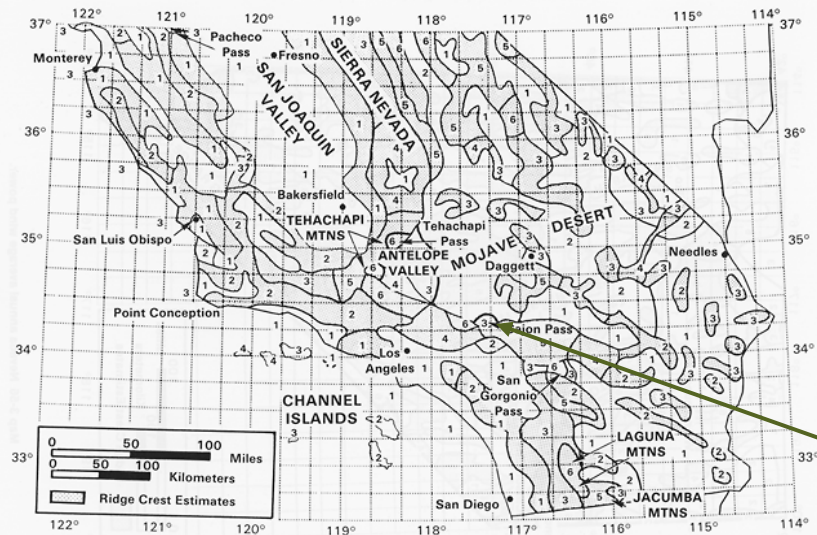
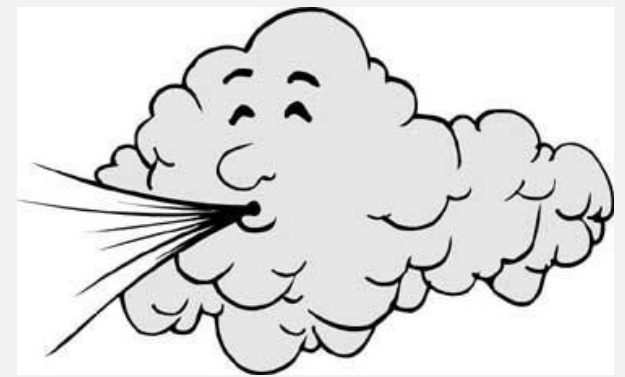


Goals & Objectives

- IEUA's goal is to maximize renewable energy, optimize energy usage and become gridless by 2020
- Electric demand is approximately 8 MW avg.(12 MW peak)
- Renewable Energy includes:
 - Solar Power (completed)
 - Wind Power
 - Fuel cells
- IEUA executed Power Purchase Agreements (PPA) for receiving three renewable energy sources.

Wind Environment

- ❑ Minimum 8 mph (4 m/s) wind speed for turbine power generation cut-in
- ❑ Local area wind speed averages 13 mph



**IEUA/IERCA in Class 3 Area
(Avg. speed 13 mph)**

Proposed 900 kW Wind Turbine
Location



**Regional WWTP-
4/IERCF Complex**



RP4 Wind Turbine PPA

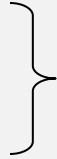
Deal Points

- Provider: Foundation Windpower
- PPA term: 20 years
- PPA price: \$0.085 per kWh, fixed 2.0% escalation for 2 years, and 3.0% thereafter
- Estimated Annual Power Production: 2190 MW-Hr
- Benefit of low O&M Costs
- Lowest unit cost among all on-site power generation systems



PPA BENEFITS

- No development cost
- No capital investment
- No maintenance cost

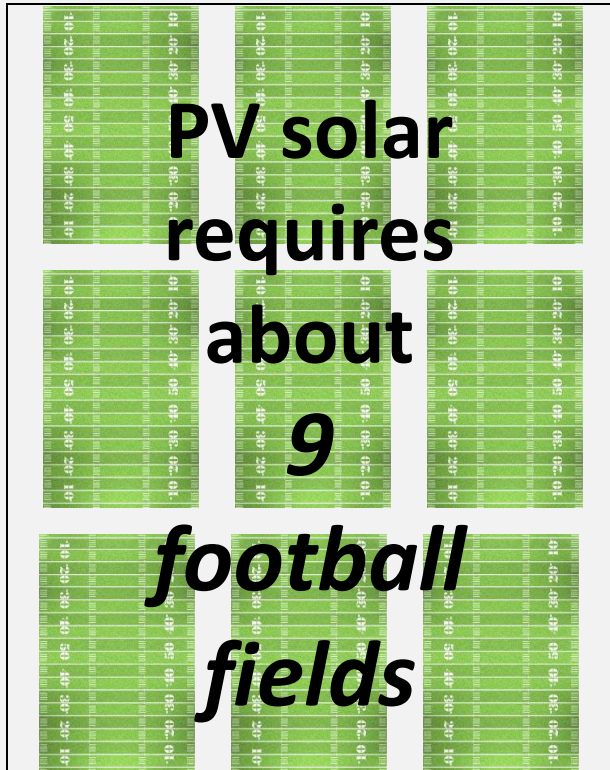


**Minimal IEUA / IERCA
Expense**

- Stable and predictable power cost
- Over 1.5 million kWh generated annually with zero air emissions
 - Will displace 6,125,000 lbs of carbon = to planting 8,624 trees or removing 528 cars from the road
- Wind turbine is a visible symbol of environmental stewardship
- Power generated will be supplied to RP-4 and IERCF with the ability to control the amount of power to be provided to each facility (SEPARATE METERS)
- Small footprint compared to solar

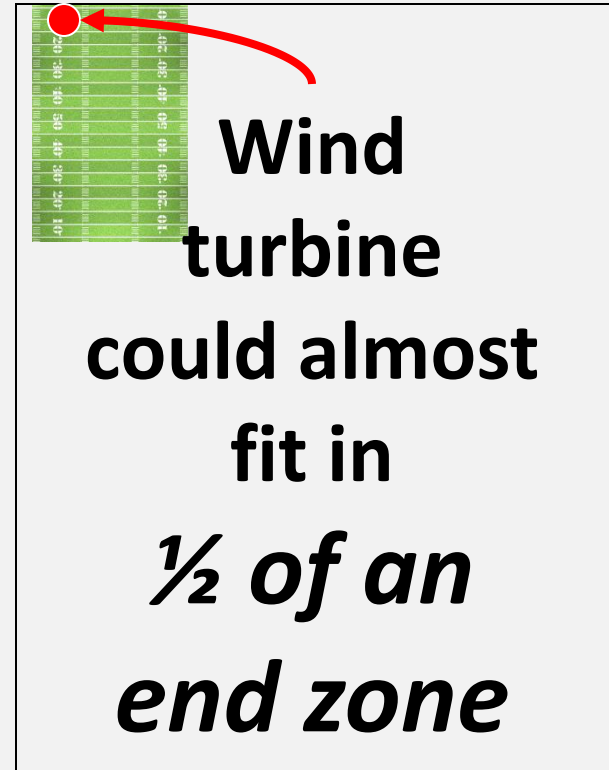
Wind Equipment – Efficient Use of Real Estate

Solar PV – 1.0 MW



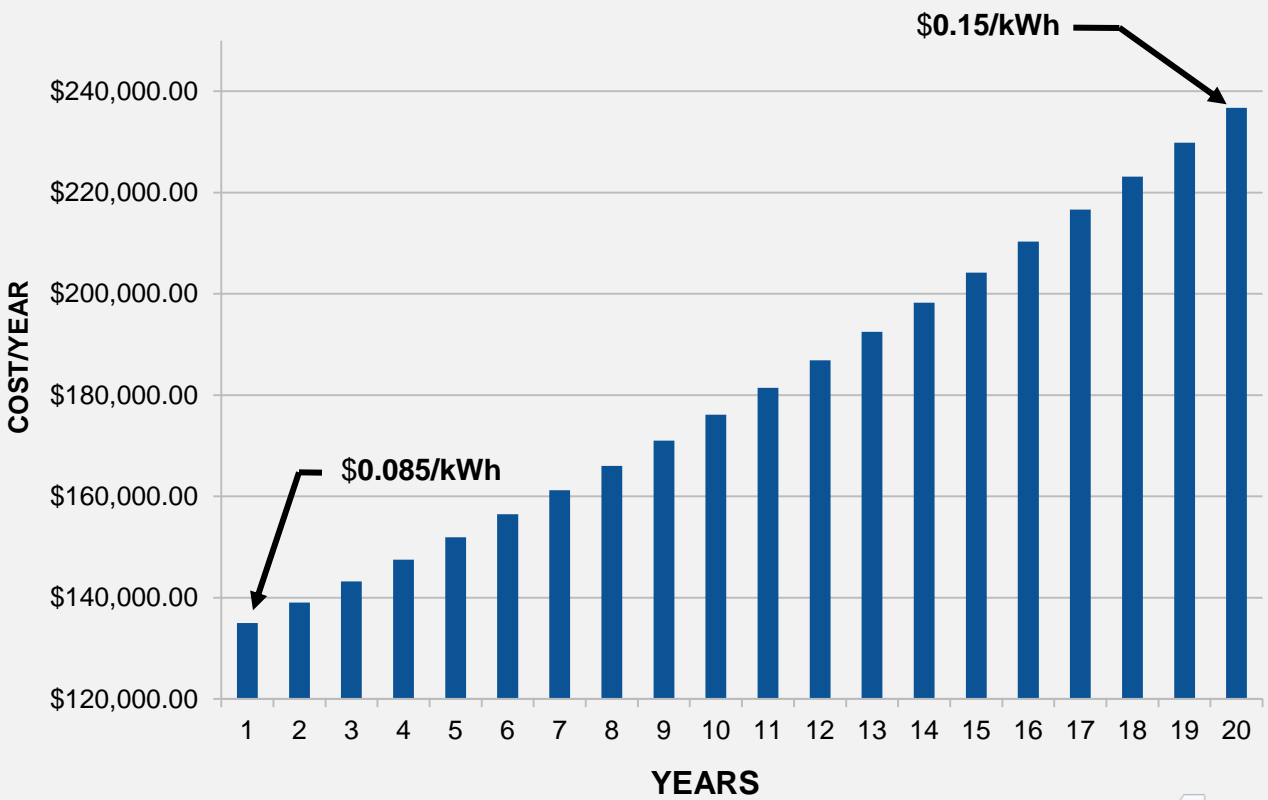
= 6 to 8 acres

Wind – 1.0 MW



= ~.06 acres (50`x50`)

COST OF POWER – 20 Year Example



Current Power Rate at \$0.13/kWh



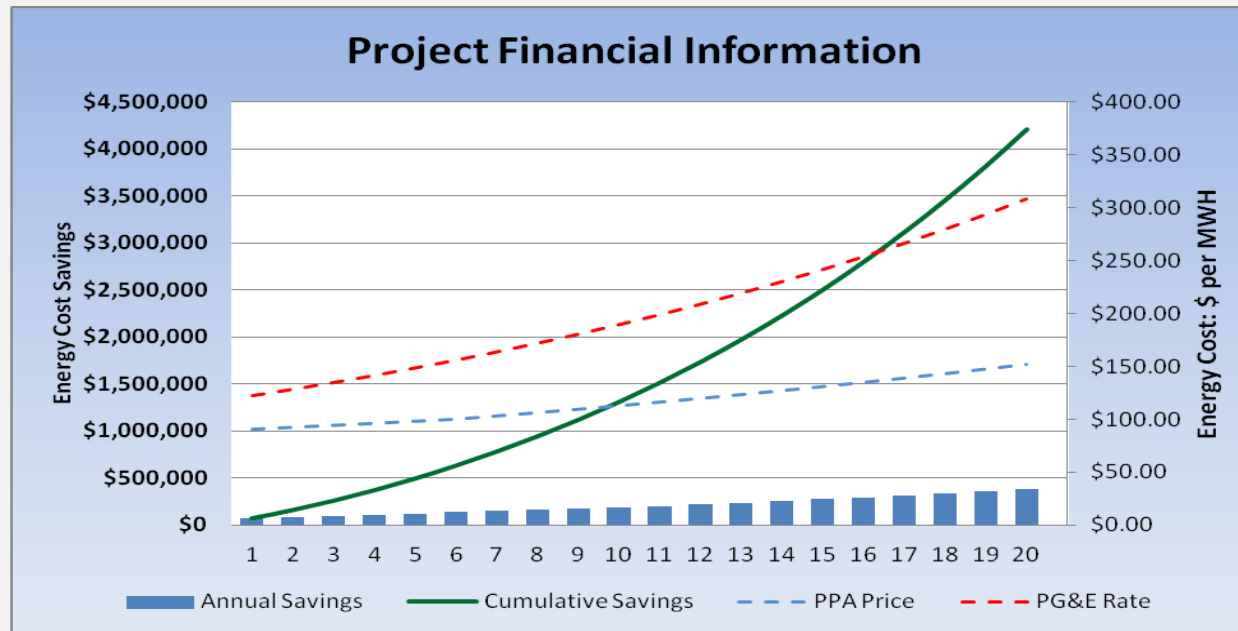
PPA Base Model – Reduces Costs

Zero Payback Period

- All upfront and ongoing expenses paid by Provider
- Minimal costs incurred by the customers during permitting, design and construction.
- Project returns positive cumulative cash flow on Day One

Significant Cumulative Savings

- SCE prices increases historically, escalate at 5%-6% annually
- Customers may save millions of dollars in energy costs



Frequently Asked Questions

Q: What expenses will the customer incur?

A: Minimal expenses to coordinate the planning, design and construction. May have some internal legal or closing costs. Customer leases ~ 50 sq. ft. parcel for \$1 per year over the 20 year project life. Turbines are delivered, installed, and commissioned at Provider's expense.

Q: Who pays repair, maintenance, and operational costs?

A: Provider pays all costs associated with operating and maintaining the turbines for the full project lifetime.


Q: How does IEUA (customer) save money?

A: All the wind power is sold to the customer at a discount to their utility rates. This results in an energy charge savings, and in some cases demand charge savings too.

Q: What happens at the end of the 20 year project life?

A: Provider will extend the power purchase arrangement or "re-power" with the best available technology. The customer may also purchase the facility at the then fair market value.

PROJECT CONSIDERATIONS

- ❑ **Suitability of site**
 - ❑ **Environmental Aesthetics – height**
 - ❑ **Permitting - compliance with CEQA Process and FAA**
 - ❑ **Real Estate: Site Lease within the PPA.**
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PROJECT PERMITS

FAA: Determination of No Hazard

CEQA: Negative Declaration

-Advertisement in newspaper for two Sundays, Cities within 5-mile radius of the site for 30 days



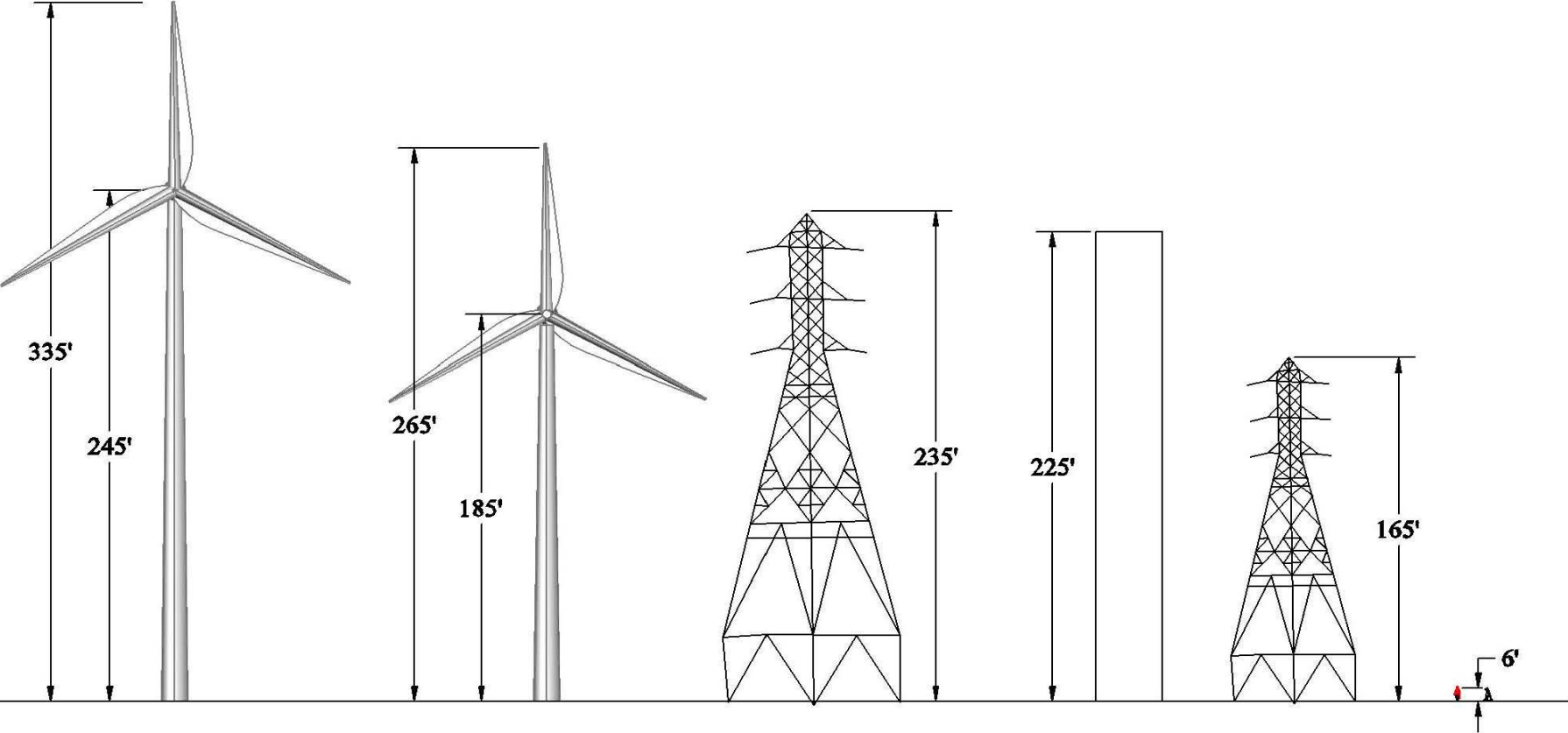


RENDERINGS OF THE WIND TURBINE at RP-4



Rendering: South of Arrow Rt. on 15 Freeway (north); View:

Wind Turbine Height Comparison



1.0-MW Wind Turbine at RP-4



May-June 2011 -- Foundation work
June 2011 -- Construction & Erection
July.-Sep. 2011 -- Electrical & Interconnection
October 2011 – Commissioning





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QUESTIONS?