



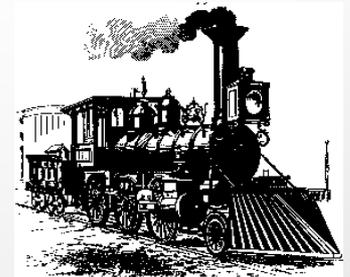
# AGUA CALIENTE BAND OF CAHUILLA INDIANS

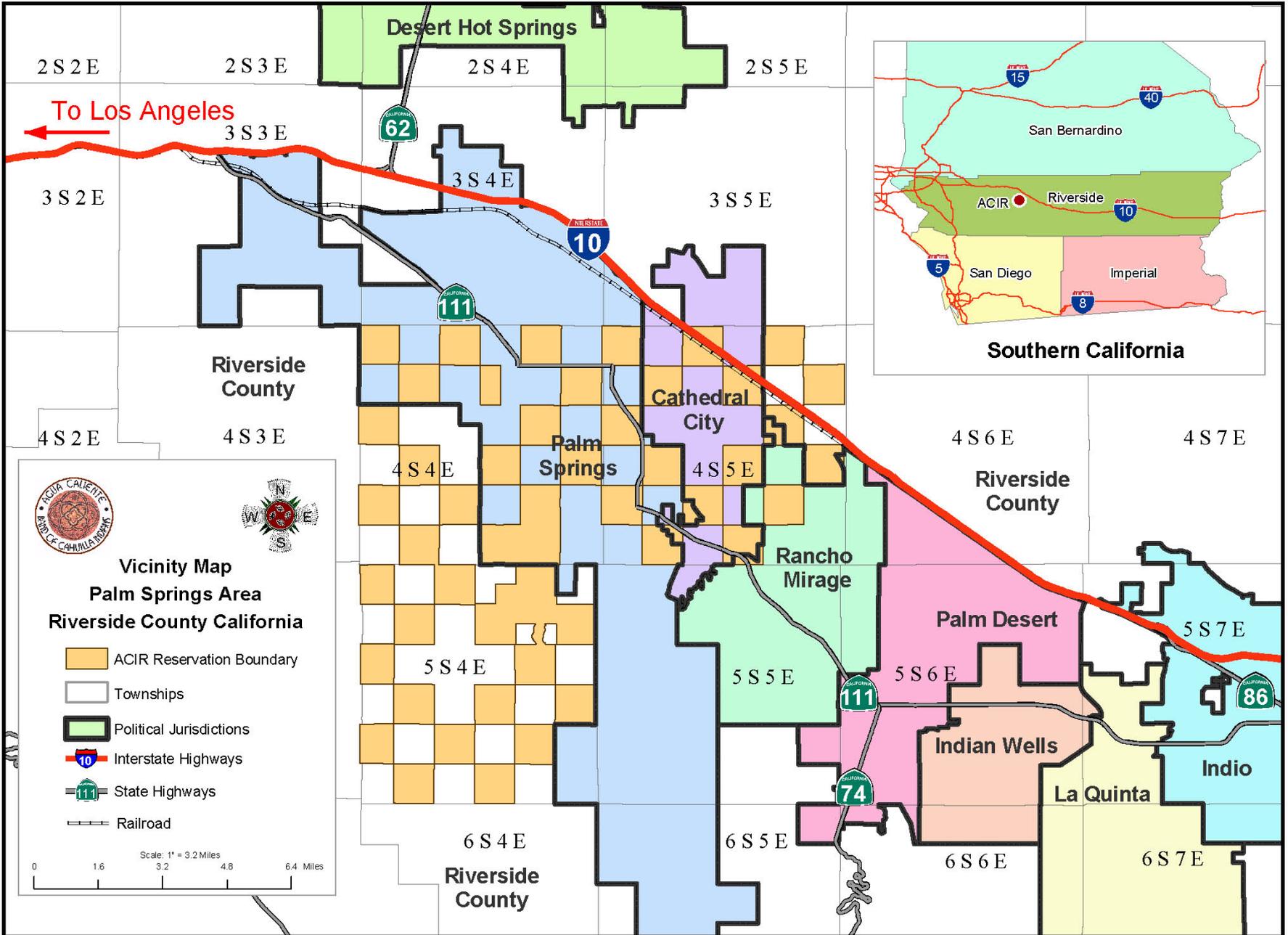




# Reservation Established

- ❑ 1876 – Executive Order by President U.S. Grant
  - *Only Section 14, & East ½ of Section 22*
- ❑ 1877 – Reservation expanded into checkerboard by President Hayes
  - *Even-numbered sections for the Tribe*
  - *Southern Pacific Railroad owned the odd-numbered sections (1862 Pacific Railway Act)*
- ❑ 32,000+ acres set aside for the Reservation







# Indian Canyons Trading Post

- ❑ 700sq. ft. building located 2 miles from the electrical grid
- ❑ Open 7 days a week (weekends only during summer)
- ❑ Power was provided by an aging propane generator
- ❑ Soaring maintenance and operation costs/reliability issues
- ❑ Noisy/trailer backup diesel generator put into fulltime use
- ❑ Multiple options considered in 2008
  - 2005 BIA Mineral Assessment grant
  - 2007 DOE First Steps grant





# Trading Post Solar Project

- ❑ Completed in 2 Phases 2009-10
- ❑ 8.25kW Off-grid Solar System
- ❑ 30 PV Panels
- ❑ 7.5kW backup diesel generator
- ❑ 1-2 Day Battery Backup (48V)
- ❑ Fully Automated





# Project Challenges / Lessons Learned

- ❑ 24/7 – 365 days/year operational requirement
- ❑ Site restrictions
- ❑ Built-in redundancy
- ❑ “Hands free”
- ❑ Remote monitoring

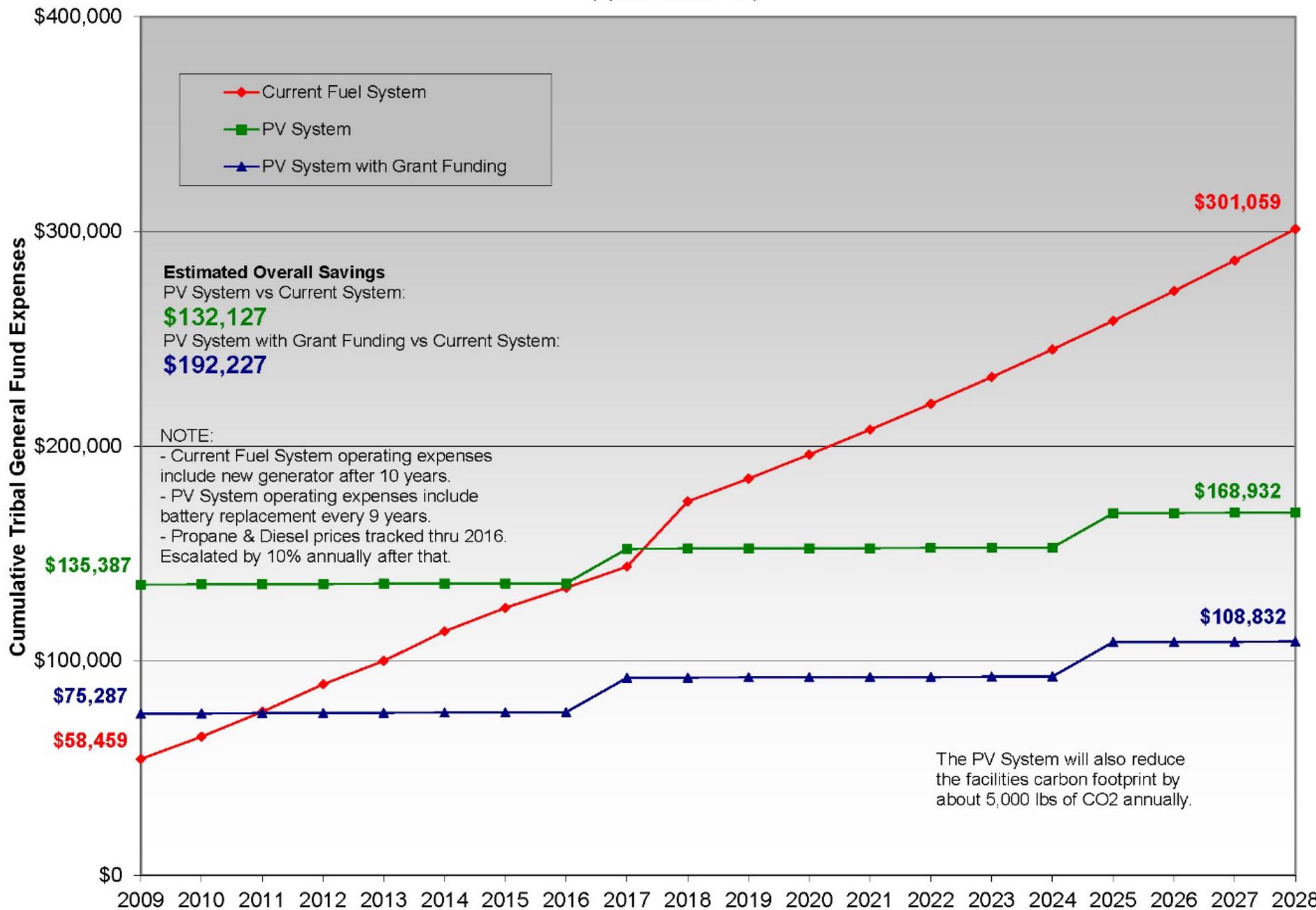


- ❑ Limited options
- ❑ Compatibility issues
- ❑ System sizing
- ❑ Troubleshooting issues
- ❑ Cellular Internet connection problems



# Trading Post Power System 20-Year Cost Comparison

(updated 3-31-16)





# Heritage Plaza Project

- ❑ Parking lot reconstruction with \$1.8M in Tribal Transportation Program funding:
  - Replace asphalt surface with concrete
  - Install carport shade structures
  - Relandscape with drought tolerant plantings
  - Project to be completed in 2 phases
- ❑ Carport shade structures were designed to be “solar ready”
- ❑ DOE grant funding pursued to install 76.9kW solar system on the carports





# Heritage Plaza Solar Project

- ❑ \$240,000 Project; 50/50 match DOE Grant & Tribal Funds
- ❑ 79.95kW System – 246 Solarworld PV Panels (325W ea)
- ❑ 99% power offset for \$22,000 annual electric bill
- ❑ Installation complete, permit signed off, & system turned on
- ❑ Functioning as designed absent Net Metering credit
- ❑ Interconnection Agreement Application submitted to SCE
- ❑ Payback with grant funding in ~5 years



# Phase 1 Complete





# Solar Project in Phase 1





# Phase 2 Under Construction





# Solar Monitoring Software

**Fronius** Heritage Plaza

OVERVIEW | ENERGY BALANCE | BACK TO OLD SOLAR.WEB

**CURRENT POWER**

**ENERGY BALANCE TODAY**

126 kWh

**EARNING**

November 2016  
0.00 USD

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**CO<sub>2</sub> SAVINGS TOTAL**

84

**HERITAGE PLAZA**

My PV systems > Heritage Plaza Go to top

**Fronius** Heritage Plaza

← **PRODUCTION** | CONSUMPTION | RETURN ON INVESTMENT | EXPENSE MONTH ▾

**Production**

| Day | Production (kWh) |
|-----|------------------|
| 1   | 0                |
| 2   | 0                |
| 3   | 0                |
| 4   | 0                |
| 5   | 0                |
| 6   | 0                |
| 7   | 0                |
| 8   | 0                |
| 9   | 0                |
| 10  | 285              |
| 11  | 320              |
| 12  | 325              |
| 13  | 305              |
| 14  | 305              |
| 15  | 305              |
| 16  | 285              |
| 17  | 305              |
| 18  | 305              |
| 19  | 300              |
| 20  | 295              |
| 21  | 295              |
| 22  | 295              |
| 23  | 120              |
| 24  | 95               |
| 25  | 295              |
| 26  | 265              |
| 27  | 175              |
| 28  | 175              |
| 29  | 205              |
| 30  | 140              |
| 31  | 230              |

October 2016

My PV systems > Heritage Plaza > Energy balance Go to top



# SCE Electricity Readings

> Usage > Billed Months Print Download

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Find a Service Account

Account number or nickname  GO

Enter the service account number or nickname and click "Go."

[Understand My Bill](#)
[Savings Center](#)
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[Back to Customer Account Listings](#)

**Customer Account:** 2-22-896-3187  
**Service Account:** 3-018-3019-90

901 E TAHQ TZ CYNWAY UNIT  
 C105  
 PALM SPRINGS CA 92262

View Another Billed Month: Month

**Billed Month**  
 Sep 01, 2016 - Oct 03, 2016

Total
  On Peak
  Mid Peak
  Off Peak

Average Daily Usage: 101.56 kWh    Total Usage: 3,250 kWh    Bill Cost: \$515.62

\*An outage affected your usage for some or all of this period.  
 Roll over any bar to see more details  
 Click any date to view hourly usage

Weekday Weekend/Holiday Event

[See Usage Details](#)
[See Monthly Trend](#)

> Usage > Hourly Print Download

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Find a Service Account

Account number or nickname  GO

Enter the service account number or nickname and click "Go."

[Understand My Bill](#)
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[Back to Customer Account Listings](#)

**Customer Account:** 2-22-896-3187  
**Service Account:** 3-018-3019-90

901 E TAHQ TZ CYNWAY UNIT  
 C105  
 PALM SPRINGS CA 92262

View another day: Day

**Hourly**  
 Sep 29, 2016

Average Hourly Usage: 2.70 kWh    High Temp: 96°F

\*An outage affected your usage for some or all of this period.  
 Roll over any bar to see more details  
 Click an hour to view 15 minute interval usage

OnPeak MidPeak OffPeak

\*Learn more about [Time-of-Use](#).

[See Recent Usage](#)



# Questions?

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