The Electric Cooperative Model: The PEC Story and the Future of the Utility Industry

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UT Energy Week 2017, Austin, TX
Over 900 electric cooperatives
Serve nearly 42 million members in 47 States
Cover ~75% of nation’s land mass
Own 42% of all distribution lines
Totals 2.6 million line miles
Generate ~5% of total electricity produced in the U.S.
Deliver ~11% of kWhs sold in the U.S. annually

Not for Profit, Consumer Owned, Consumer Controlled
Rural Electrification Growth
Cooperative Principles

Voluntary & Open Membership
Democratic Control
Member’s Economic Participation
Autonomy & Independence
Education, Training, & Information
Cooperation Among Cooperatives
Concern for Community
how do electric cooperatives compare with other utilities?
Average Consumers Served

Data Source: National Rural Electric Cooperative Association
Consumers per Mile

Data Source: National Rural Electric Cooperative Association
Revenue per Mile

Data Source: National Rural Electric Cooperative Association
about PEC
Cooperative Territory

- Western: 4,000 Miles of Line, 2 Accounts/Mile, 8,100 square-mile territory
- Eastern: 17,000 Miles of Line, 21 Accounts/Mile

PEC Territory

Locations:
- Austin
- San Antonio
Cooperative snapshot
As of Dec. 31, 2016

287,422
Active Accounts

12,140
Total Meter Growth (2016)

$56M
2016 Margin (EST)

38%
2016 Equity (EST)

723
Employees

> 6 Billion
kWh sold
Power Supply Diversity

LCRA Supply Minimum (65%)

Load Release Elections

Available Load Release

Junction Service Area

Wind

Available Wholesale Load Release Options
Market Purchases, Wind, Solar, Fueled Generation

~5%

~10%

~5%

Short Notice Requirement for Renewable Energy Deployment

LCRA: Lower Colorado River Authority
Everything has changed....
nothing has changed

-Unknown
Today’s Power System

Core Mission – Today
1. Safe
2. Reliable
3. Affordable
4. Environmentally Responsible

Source: Electric Power Research Institute
Integrated Power System

Core Mission – Future
1. Safe
2. Reliable
3. Affordable
4. Environmentally Responsible
5. Flexible
6. Resilient
7. Connected

Source: Electric Power Research Institute
advancing technology...
Operational Efficiencies & Advanced Maintenance

- Condition Based Maintenance
- Aerial Inspections
- Dissolved Gas Analysis
- Reliability & Resiliency
- Non Destructive Testing
- Automatic Vehicle Location
- Airborne Ultrasonic
- Cloud-based Inspections
- Mobile Refueling
- Predictive Analytics
- Dissolved Gas Analysis
- Airborne Ultrasonic
- Mobile Refueling
- Predictive Analytics
Optimizing the Grid and Operations

Specialized Staffing

Enterprise Software Overhaul

Massive Investment in New Tools

New GIS Inventory >500,000 Nodes

Full Device Connectivity & Analysis

New Outage Management System

Advanced Volt/VAR Optimization

Distribution Fault Anticipator

Mobile Re-Fueling & Maintenance

Ushering In LOWER Rates/Options
Can storage provide value?
Build a microgrid as an intelligent network node, co-optimizing PV, storage, EV charging and building loads

Enhance grid system layer with real-time distribution system situational awareness and advanced analytics.

Solution will enable cost effective integration of high penetrations of distributed PV in the power grids of the future, while meeting the objectives of reliability, resiliency and affordability.
service innovation...
is solar cost effective?
Assumptions

- Large C&I Consumer
- 1.2MWdc System
- Single Axis Tracking
- Installation Cost: $1.90/W
- Solar Degradation: 0.5% annually
- DC to AC Size Ratio: 1.1
- Capacity Factor: 20.6%
Community Solar Solution
~ 1MW

Multiple locations – up to 15MW

Strategically located within PEC territory

Consider anchor-tenants – C&I could commit to 50% of the output, reduces risk of low subscriptions

Provides system benefits
Lease-Space Solar Solution

250kW – 1MW

- Partnering with PEC members
- Installing on member owned properties
- Increased power quality
- PEC will own the generation
financing...
Empower Loans

Up to 10-year loan on the face of the bill (max $20K)

USDA Rural Utilities Service - Energy Efficiency Conservation Loan Program (low interest rates)

Available for solar and storage (batteries)
5 kW PV
Avg. Consumption 1,275 kWh/Mo.

Annual Margin Reduction due to Loss of Incremental Sales $41

Financing Premium 1%

Annual Financing Margin Contribution $80

Empower Loans
consumer engagement...
## Rate Reductions

### Monthly bill at 1,000 kWh

<table>
<thead>
<tr>
<th>Date</th>
<th>Bill Amount</th>
</tr>
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<tbody>
<tr>
<td>12/2014</td>
<td>$122.70</td>
</tr>
<tr>
<td>3/2015</td>
<td>$118.70</td>
</tr>
<tr>
<td>5/2015</td>
<td>$116.20</td>
</tr>
<tr>
<td>12/2015</td>
<td>$112.20/$106.60</td>
</tr>
<tr>
<td>4/2016</td>
<td>$109.70</td>
</tr>
<tr>
<td>6/2016</td>
<td>$107.20 (eSaver Rate)</td>
</tr>
<tr>
<td>8/2016</td>
<td>$105.20</td>
</tr>
</tbody>
</table>

Also in December 2016, PEC Distributed **$8.9 Million** in Capital Credits and Invoked Revenue Adjustment Factor Saving Members **$6 Million**
Rate Options

Residential and Farm/Ranch

- **eSaver**
  - $20 monthly service availability charge
  - Paperless billing
  - Automatic bank draft
  - LEARN MORE

- **eDraft**
  - $21 monthly service availability charge
  - Automatic bank draft
  - LEARN MORE

- **eBilling**
  - $21.50 monthly service availability charge
  - Paperless billing
  - LEARN MORE

- **Conventional**
  - $22.50 monthly service availability charge
  - Paper billing
  - LEARN MORE

Water Well

Small Power

Large Power

Renewable Energy Rider

Interconnection Net Metering Up to 50 kW

Area Lighting
New energy assessment tools provide members with direct ways to evaluate and improve the way they use energy.
PEC Hill Country Solar Tour

**Installer Fair/Exhibits**
- Consumer Education
- Local Installers
- PEC Energy Advisors
- Solar Car Workshop
- Texas Solar Energy Society

**Home Exhibits**
- PV Home Sites
- Homeowner, solar installer and PEC Staff at each location
- Engage & Collaborate
Economic Development Strategies

Welcome to the Texas Hill Country

Explore the Texas Hill Country, where business is booming and community is stronger than ever. Tour the possibilities!

START TOUR
corporate citizenship...
Community Engagement

Promoting the Power of Change

$22,000+ in contributions from over 6,800 participants

Heart to Heart campaign launches Feb. 1
College Scholarships

$10K - 1
$5K – 3
2.5K – 10

2017 Scholarship increased to $100K
the future?
The Integrated Power Grid

Core Mission – Future
1. Safe
2. Reliable
3. Affordable
4. Environmentally Responsible
5. Flexible
6. Resilient
7. Connected

Source: Electric Power Research Institute
Today’s Electric Cooperatives
Tomorrow’s Electric Cooperatives?
Innovation, Excellence, Service

CORE BUSINESS
THE CO-OP DIFFERENCE
GRID TECHNOLOGIES
ENERGY FUTURE
BUSINESS SERVICES
RESPONSIVE APPROACH
INFORMATION TO MEMBERS

FLEXIBILITY
The secret of getting ahead is getting started.

-Mark Twain
pec.coop

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