


HANDOUT 1

Welcome

Arkansas Joint Committee on Advanced Communication and Information Technology



A nighttime photograph of a city skyline with several illuminated skyscrapers and buildings. The lights are reflected in a body of water in the foreground. A bridge is visible on the left side of the frame.

Helping our members work together to keep the lights on...
today and in the future

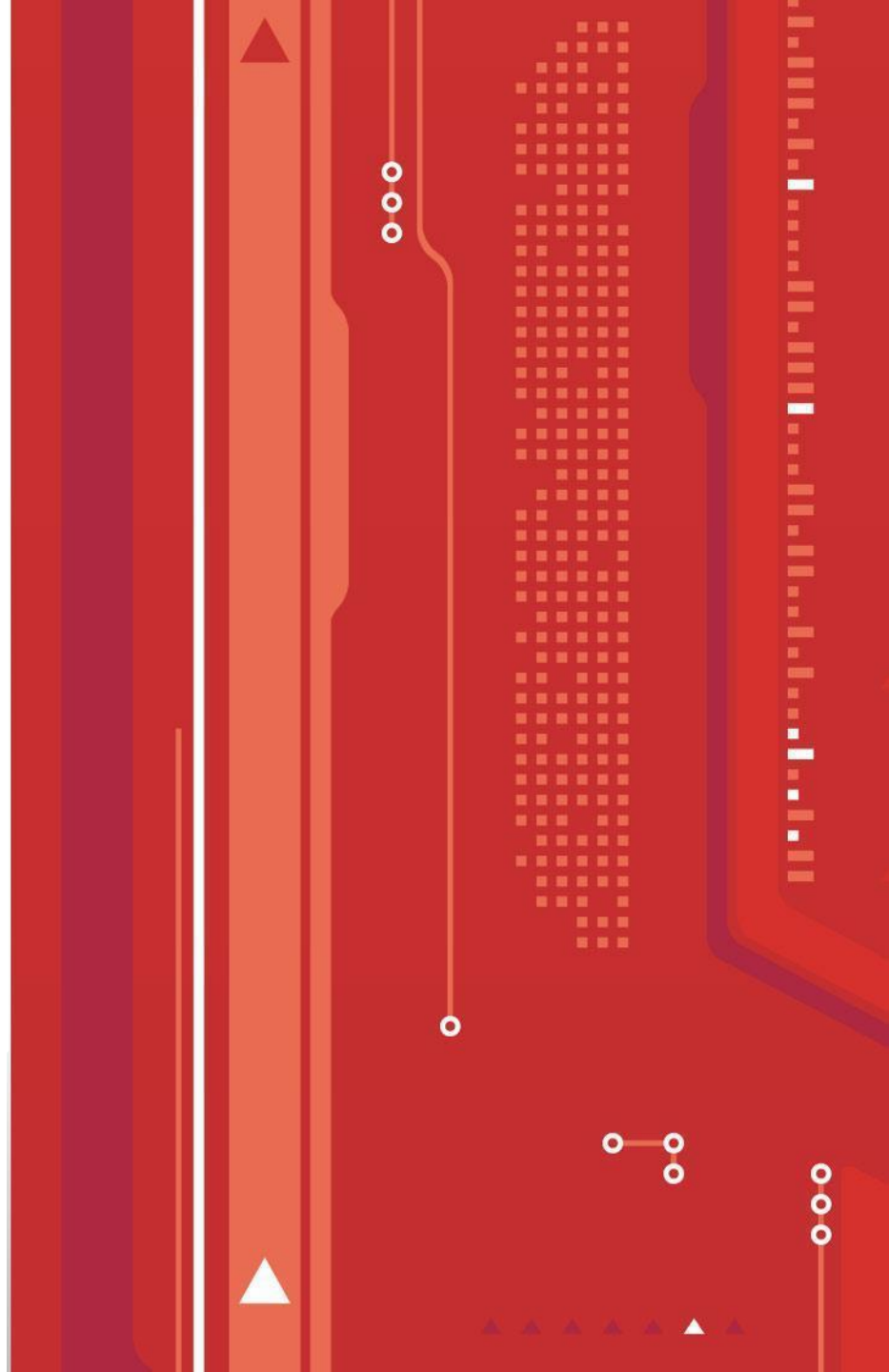
Arkansas Joint Committee on Advanced Communication and Information Technology

SPP Overview

Mike Ross

Senior Vice President

Government Affairs and Public Relations



Independent System Operator (ISO) / Regional Transmission Organization (RTO) Map



20th Century National Academy of Engineering

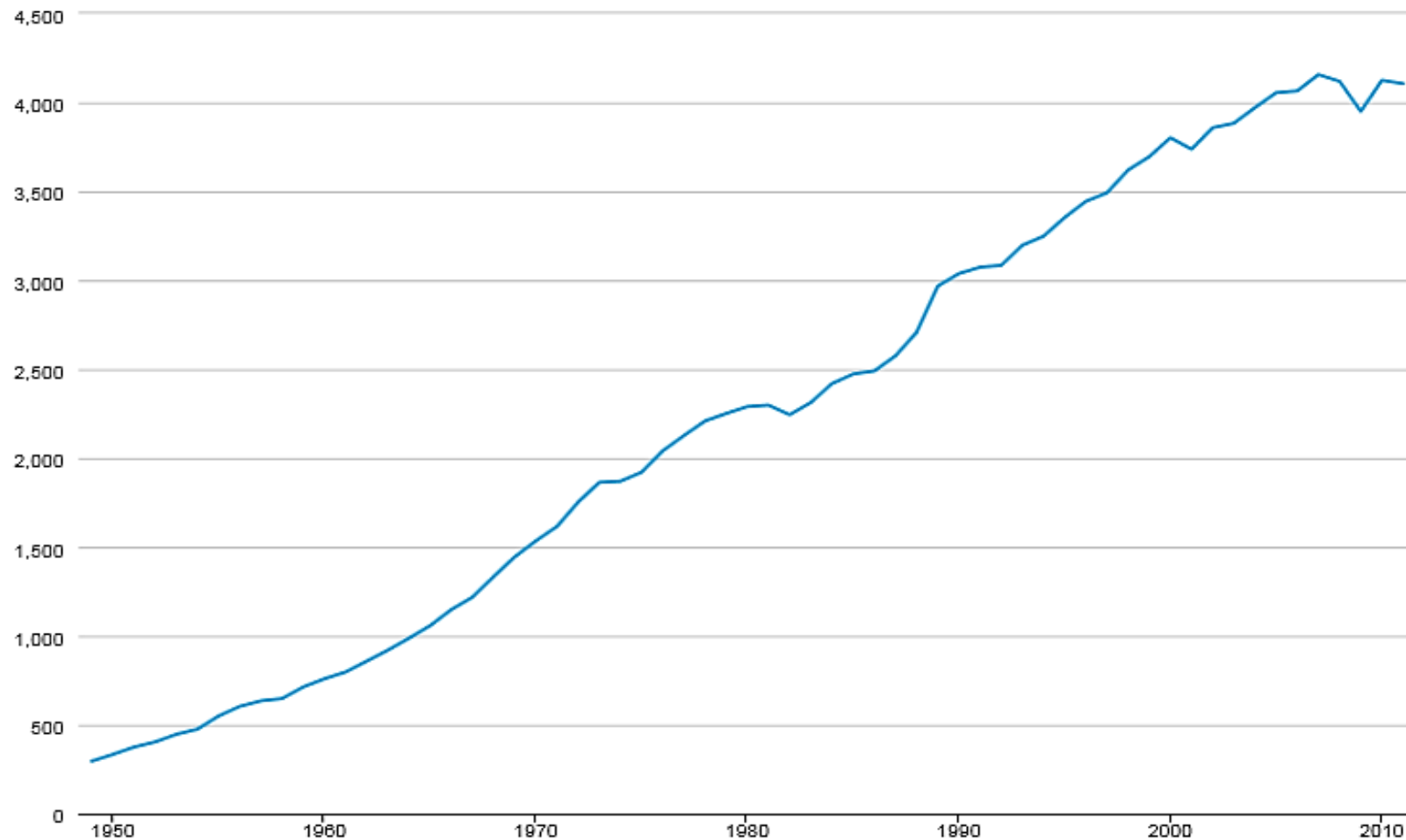
#1 Greatest Achievement: Electrification



EIA – Total Electricity (1949-2011)

Table 8.1 Electricity Overview, 1949-2011, Net Generation Total

Billion Kilowatthours





New York World-Telegram

Published, 1916, by the New York World-Telegram Company, 40 South Street.
Local Forecast: Light rains tonight, somewhat higher temperatures than last night; tomorrow cloudy followed by clearing, cooler than today.
VOL. 74—NO. 135—IN TWO SECTIONS—SECTION ONE

NEW YORK, MONDAY, DECEMBER 8, 1941
Published at special rate today
Price: 10 Cents, Mon. to Sat., 5 C.

LATEST WALL ST. PRICES
Real Estate, Page 31
PRICE THREE CENTS

1500 DEAD IN HAWAII

CONGRESS VOTES WAR

Tally in Senate Is 82 to 0, In House 388 to 1, with Miss Rankin Sole Objector

By LYLE C. WILSON,
United Press Staff Correspondent.

WASHINGTON, Dec. 8.—Congress today proclaimed existence of a state of war between the United States and the Japanese Empire 33 minutes after President Roosevelt stood before a joint session to ask such action and pledge that we will triumph—"so help us, God."

Democracy was proving its right to a place in the



100 to 200 Soldiers Killed in Japanese Raid On Luzon in Philippines

BULLETIN.

By the United Press.

MANILA, Dec. 8.—Press dispatches reported that 100 to 200 troops, 60 of them Americans, were killed or injured today when Japanese warplanes raided Iba, on the west coast of the island of Luzon, north of the Olongapo naval base.

BULLETIN.

December 7, 1941



9 Days After the Bombing of Pearl Harbor...

- **SPP Founded in 1941 with 11 members**
 - Utilities pooled electricity to power Arkansas aluminum plant needed for critical defense
- **Maintained after WWII to continue benefits of regional coordination**





Northeast Blackout of 1965

Electric Reliability Act of 1967 & North American Electric Reliability Corporation (NERC)

- Tuesday, November 9, 1965
- Affected parts of Ontario in Canada and Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont in the United States
- Over 30 million people and 80,000 square miles without electricity for up to 13 hours

Northeast Blackout of 2003



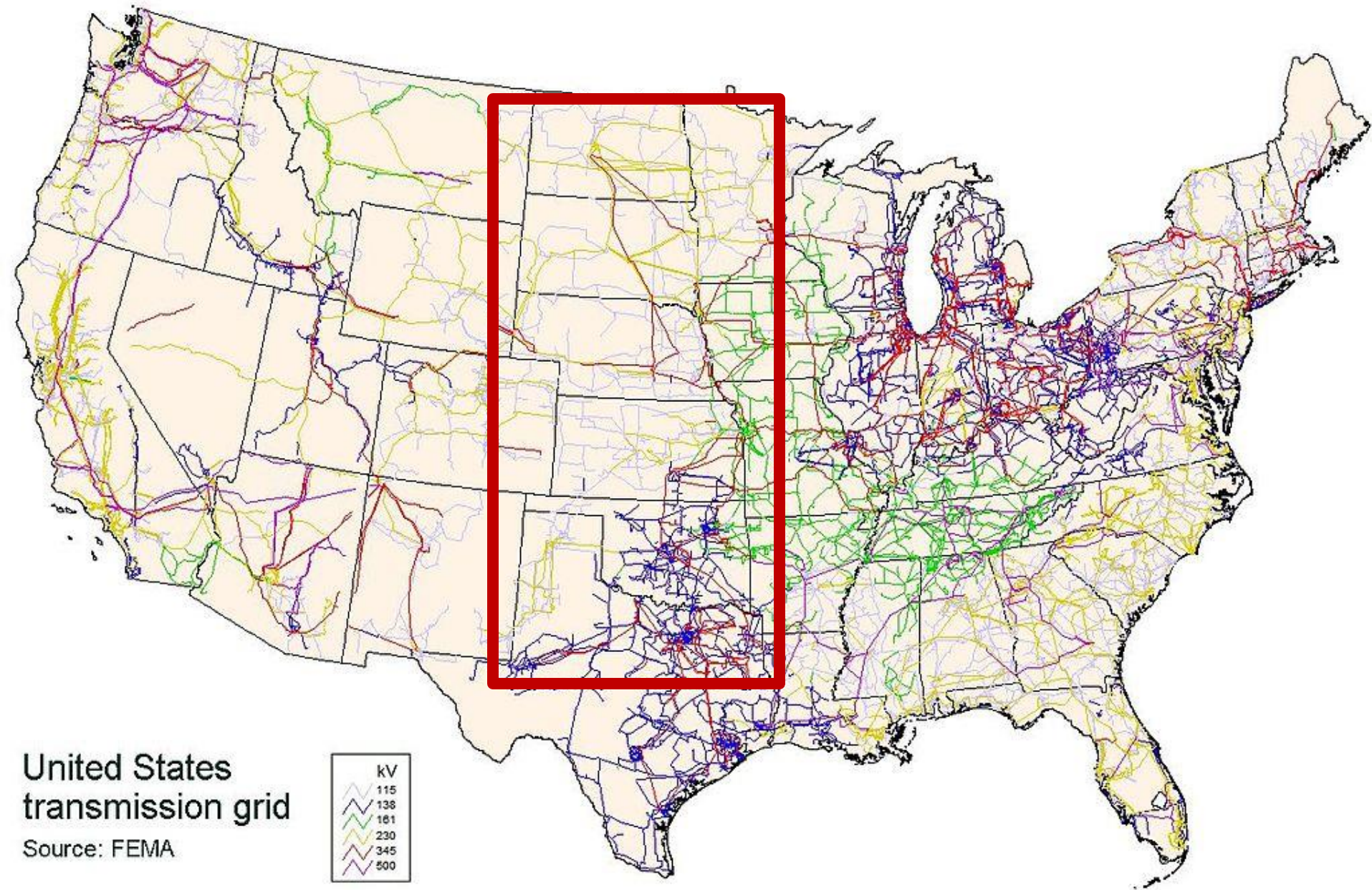
Led to Energy Policy Act of 2005



SPP's Corporate Center



United States Electric Grid



Members in 14 States

Arkansas

Kansas

Iowa

Louisiana

Minnesota

Missouri

Montana

Nebraska

New Mexico

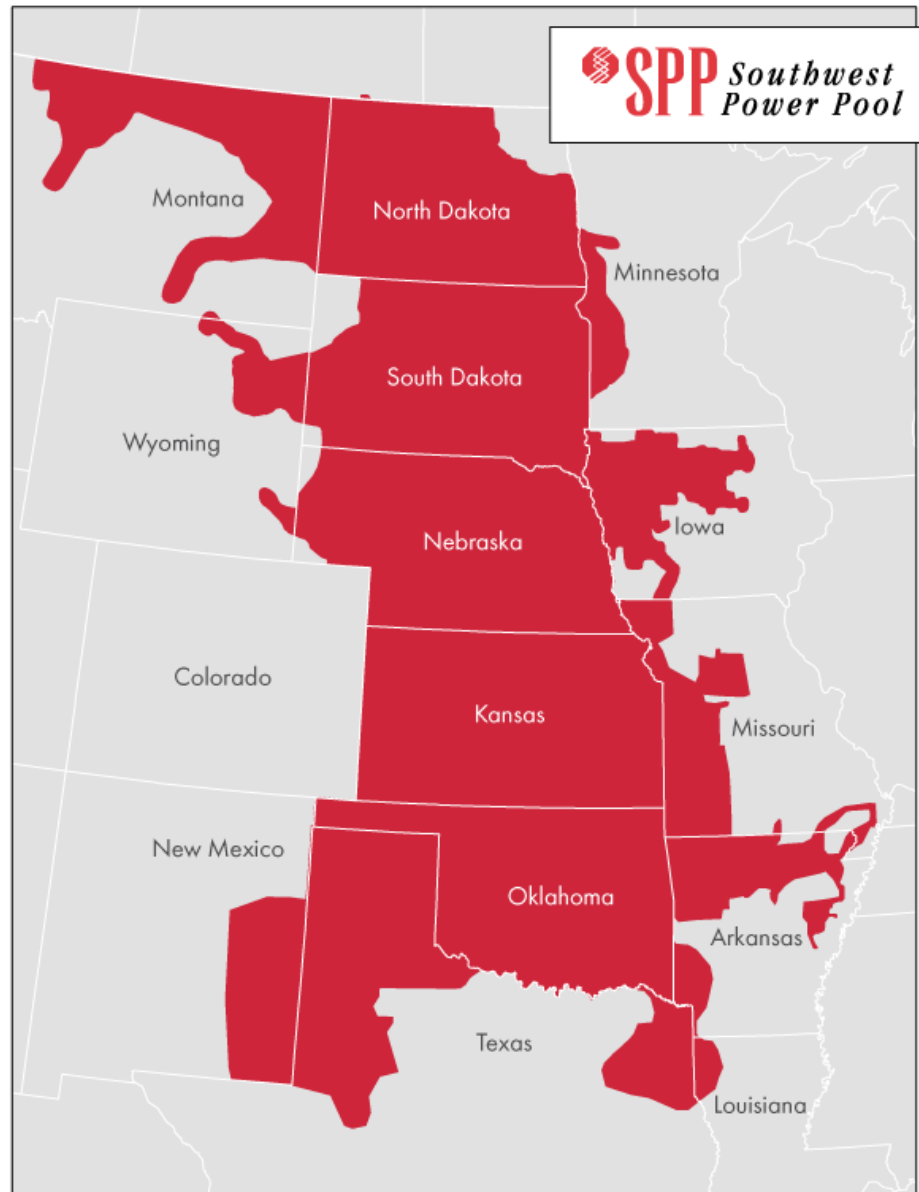
North Dakota

Oklahoma

South Dakota

Texas

Wyoming



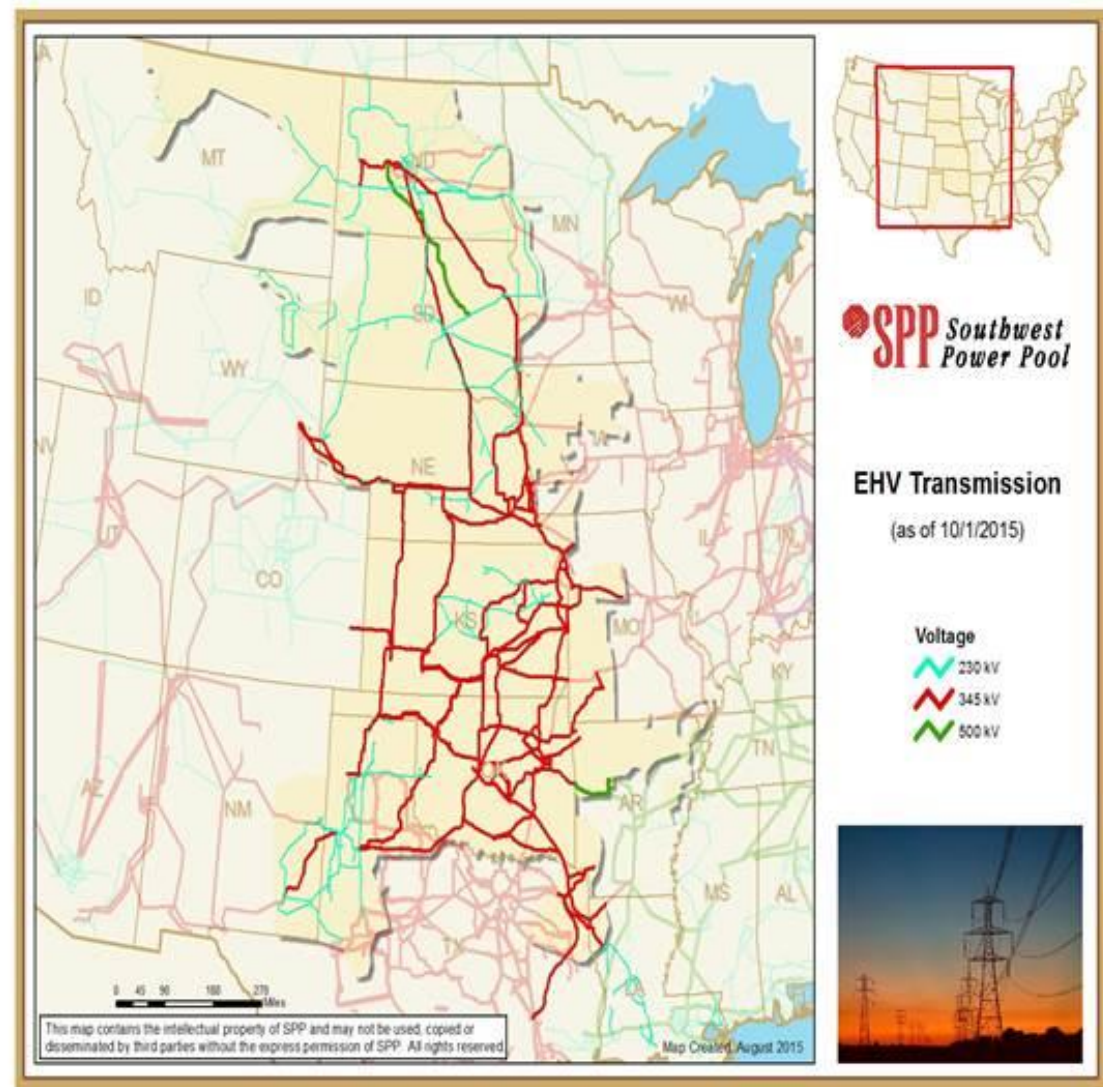
Our Membership Profile

Category	Number
Cooperatives	18
Investor Owned Utilities	18
Independent Power Producers/ Wholesale Generation	13
Municipal Systems	13
Marketers	12
Independent Transmission Companies	11
State Agencies	8
Federal Agencies	1
TOTAL	94

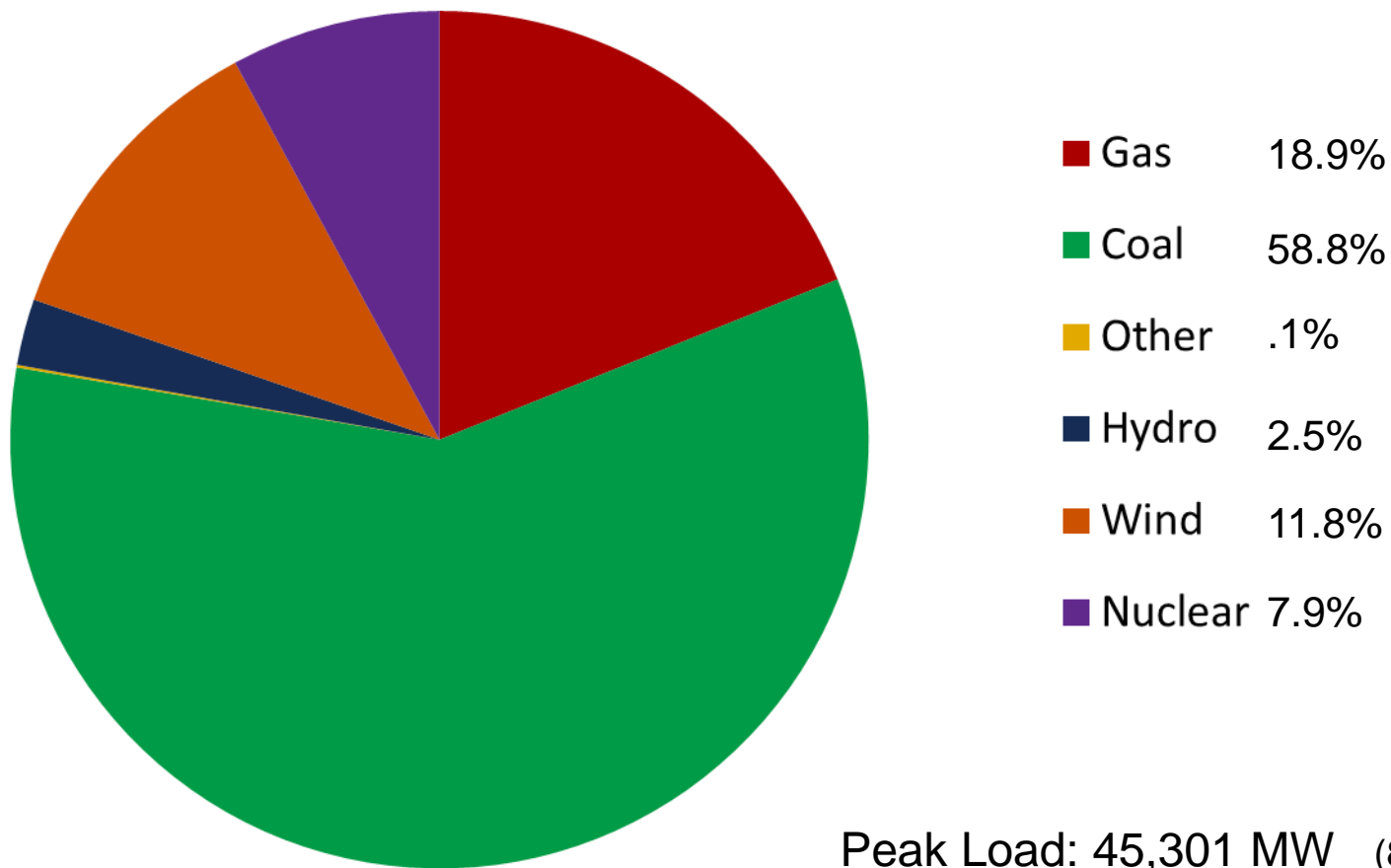
As of August 27, 2015

Operating Region

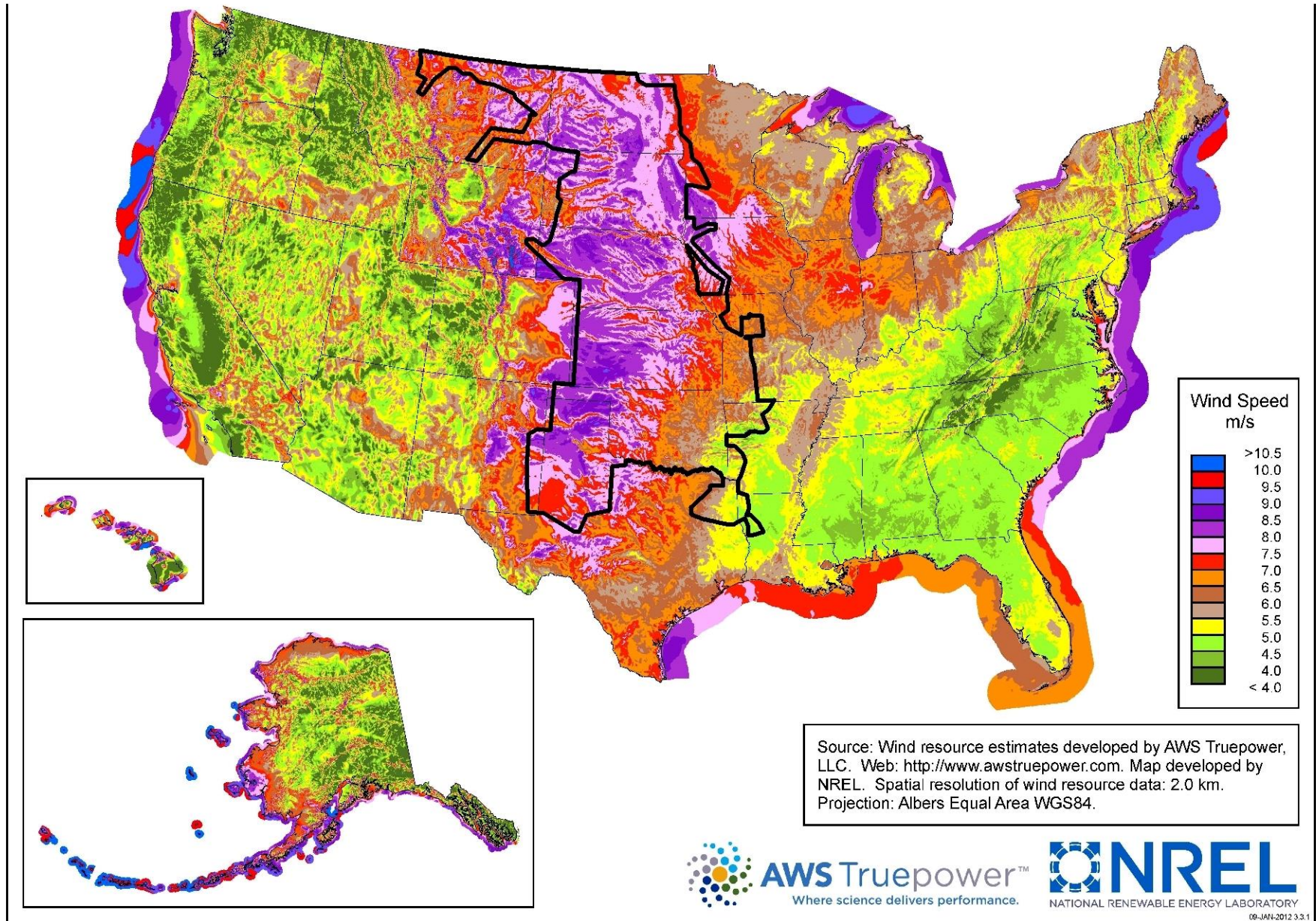
- 575,000 miles of service territory
- Nearly 18 million people
- 825 generating plants
- 4,782 substations
- Approximately 56,000 miles of transmission:
 - The 56,000 miles of transmission lines in SPP's footprint would circle the earth more than twice!



2014 Energy Consumption (MWh)



Annual Average Wind Speed



Wind Energy Development

- **Wind “Saudi Arabia”: Kansas, Oklahoma, Nebraska, Texas Panhandle, New Mexico**
 - **60,000-90,000 MW potential**
 - **More wind energy than SPP uses during peak demand**
- **9,700 MW capacity of in-service wind**
- **16,900 MW wind under development**

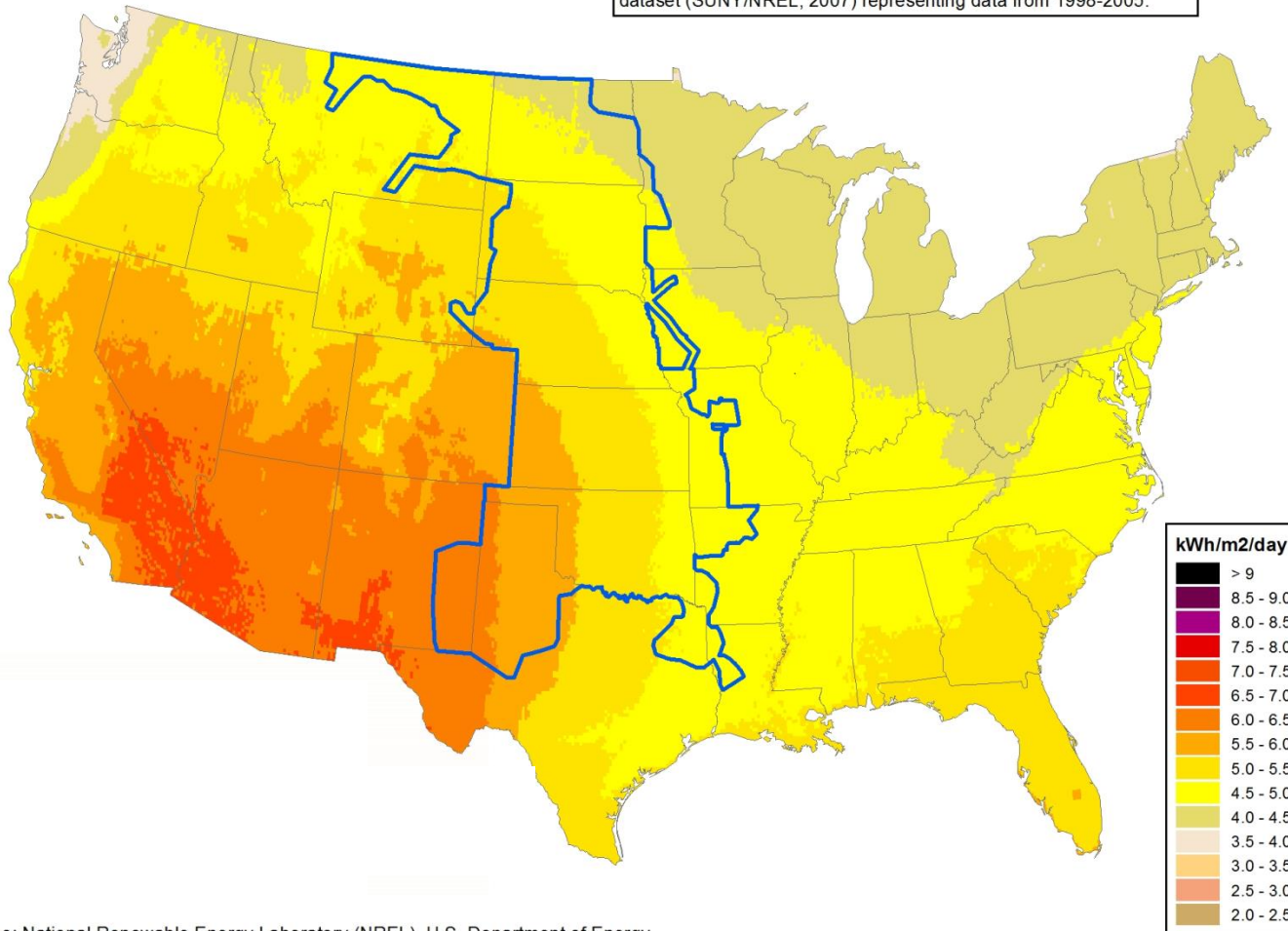


Solar in the U.S.

PV Solar Radiation
(Flat Plate, Facing South, Latitude Tilt)

Annual

This data represents annual average solar resource potential for 48 Contiguous United States and Hawaii, in High Resolution. The data for Hawaii and the 48 contiguous states is a 10 km, satellite modeled dataset (SUNY/NREL, 2007) representing data from 1998-2005.



Source: National Renewable Energy Laboratory (NREL), U.S. Department of Energy

Regulatory Environment

- Incorporated in Arkansas as 501(c)(6) nonprofit corporation
- FERC — Federal Energy Regulatory Commission
 - Regulated public utility
 - Regional Transmission Organization
- NERC — North American Electric Reliability Corporation
 - Founding member
 - Regional Entity



Governance

- **Independent Board of Directors**
- **Members Committee**
- **Regional State Committee**
- **Working Groups**



Our Major Services

- Facilitation
- *Reliability Coordination*
- Transmission Service/
Tariff Administration
- *Market Operation*
- Standards Setting
- Compliance Enforcement
- *Transmission Planning*
- Training



*Regional
Independent
Cost-effective
Focus on reliability*

Reliability Coordination

- Manage grid 24 x 365
- Anticipate problems
- Take preemptive action
- Coordinate regional response
- Independent

As “air traffic controllers,” our operators comply with ...



... more than 3,800 pages of reliability standards and criteria

Markets

- **Integrated Marketplace:** Participants buy and sell wholesale electricity in day-ahead and real-time
 - **Day Ahead Market** commits the most cost-effective and reliable mix of generation for the region
 - **Real-Time Balancing Market** economically dispatches generation to balance real-time generation and load, while ensuring system reliability.

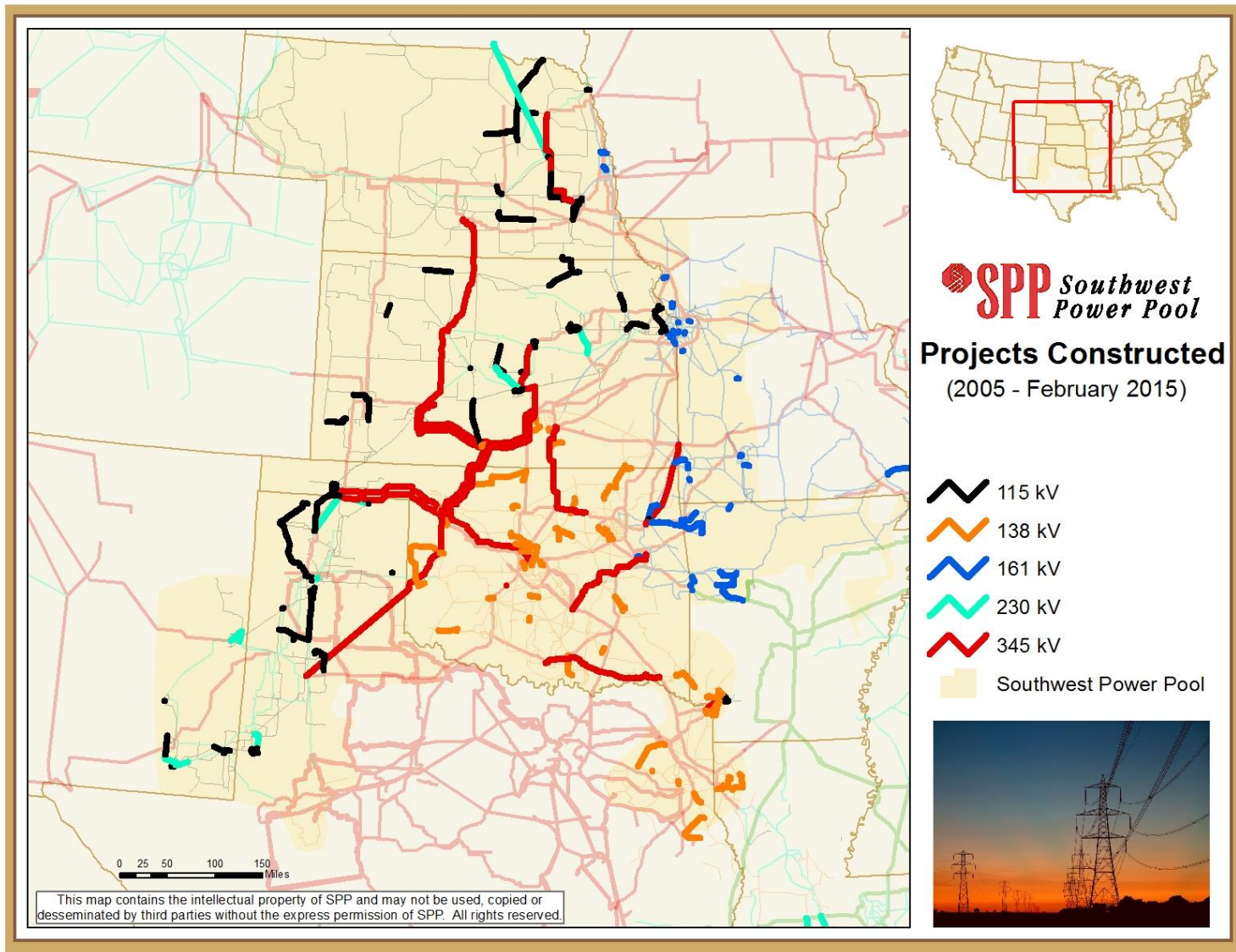
SPP markets have netted \$380 million in savings in the past year.

Transmission Planning

- **Reliability**
- **Economics**
- **Public Policy**



Projects Constructed 2005-2015



Training

- **2014 Training program awarded more than 18,000 continuing education hours to member companies**
- **SPP offers:**
 - **Regional System restoration drills**
 - **Integrated Marketplace training**
 - **Regional Emergency Operations sessions**
 - **Train-the-Trainer classes**



Some Activities Outside of SPP's Responsibility

- Lobbying
- Transmission Siting
- Generation Planning/Siting
- Transmission/Generation Construction
- Transmission/Generation Permitting
- Credit/Allowance Trading Oversight

ECONOMIC IMPACT OF SPP TO ARKANSAS

New SPP Headquarters – Completed Summer 2012



SPP Construction Economic Figures - Investment

Investment in SPP's Little Rock Campus

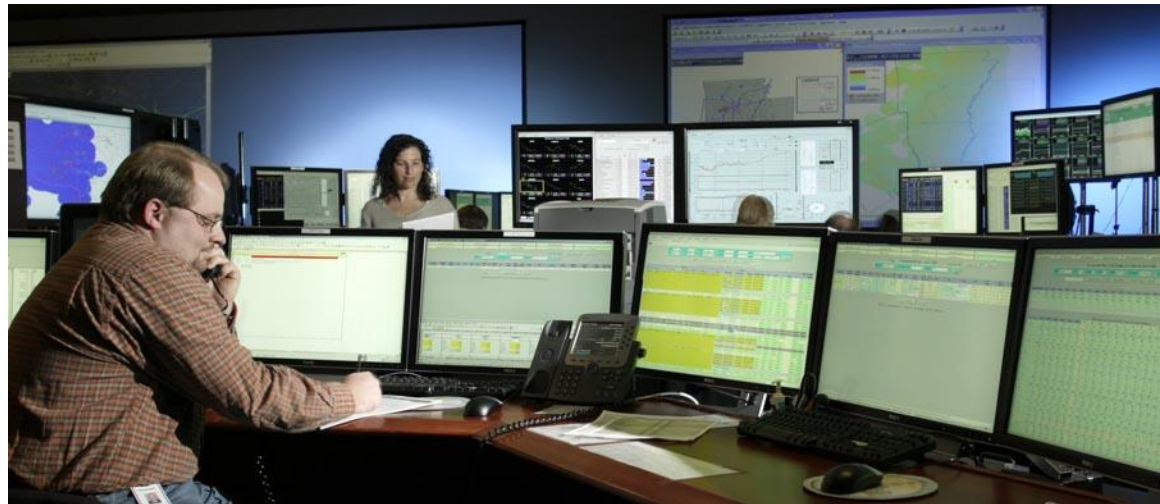
Construction Investment	\$ 61.7 M
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Equipment and IT Investment	<u>\$ 26.6 M</u>
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TOTAL INVESTMENT	\$ 88.3 M
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SPP Employment

- About 600 employees
- Median salary: \$85,100
- Primary jobs: Information Technology, Engineering, and Operations



Community Involvement and Recognition

- **Named Best Company to Work for by Arkansas Business in 2014**
- **Principal Financial Group “Top 10” Employer**
- **Employee involvement in over 70 non-profits and charities, including:**
 - Arkansas Foodbank
 - Girls of Promise
 - Race for the Cure
 - Relay for Life
 - United Way
 - Philander Smith College
 - Our House
 - UALR
 - Youth Home
 - Civic Clubs

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Helping our members work together to keep the lights on...
today and in the future

SPP Information Technology

Barbara Sugg

VP, Information Technology

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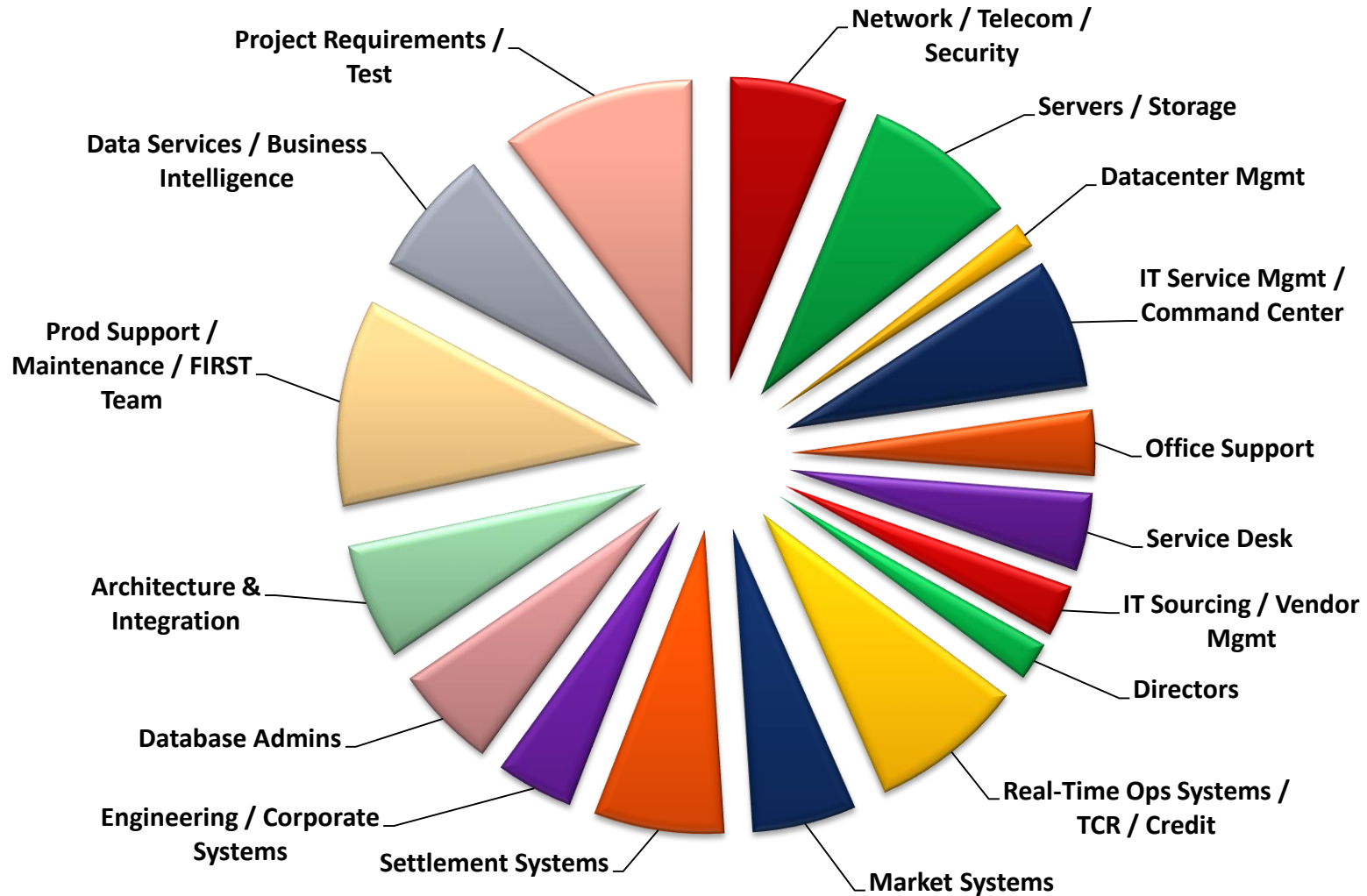


Information Technology at SPP

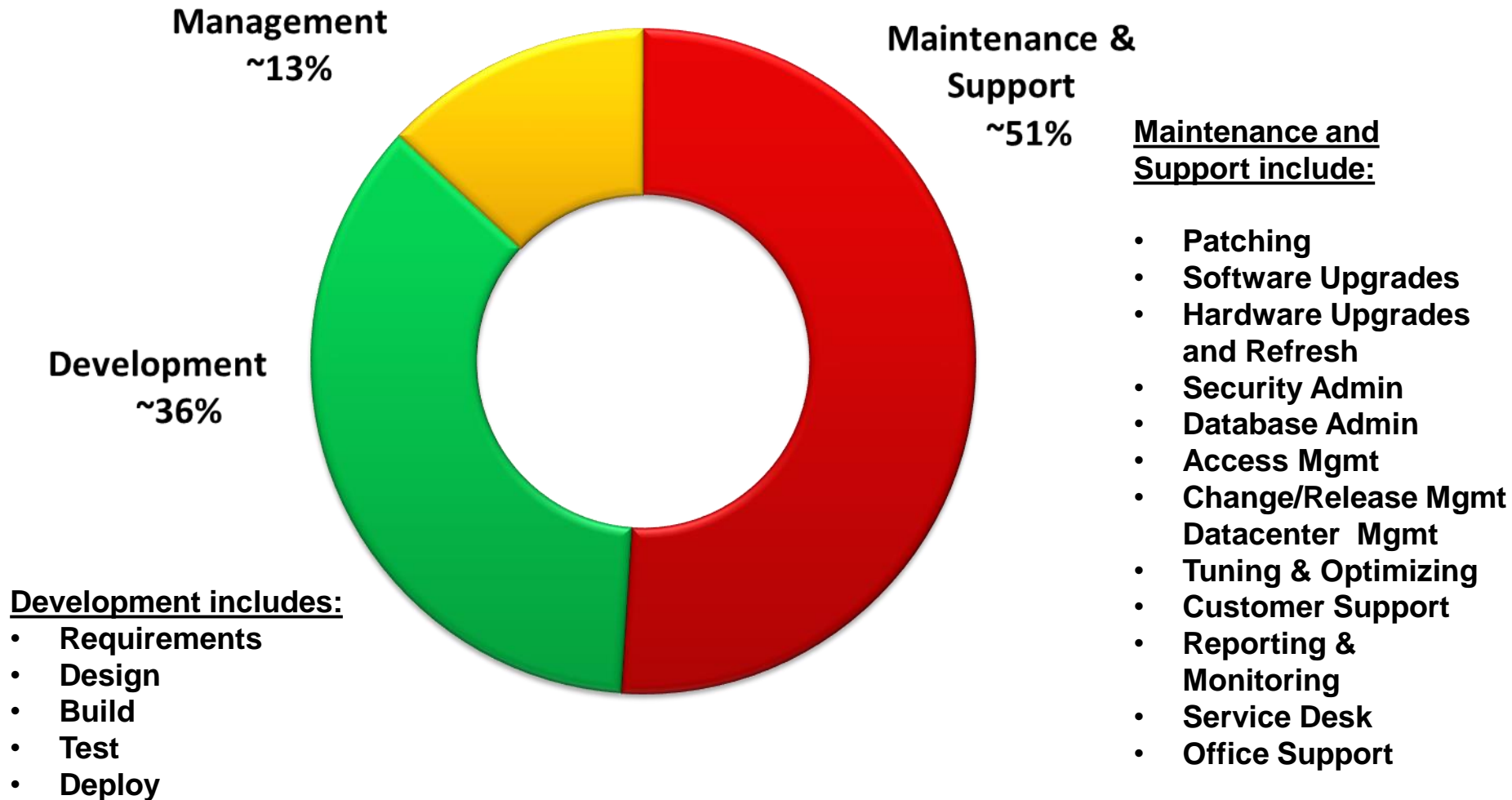
Primary Drivers of Growth in IT

- **1997 – Security Coordination (Reliability)**
- **1998 – Tariff Administration**
- **2001 – Regional Scheduling**
- **2006 – Contract Services**
- **2007 – Energy Imbalance Market**
- **2014 – Integrated Marketplace – Phase I**
- **2015 – FIRST Team implemented – 24x7 IT on-site**
- **2015 – Project Pinnacle – Marketplace Phase 2**

IT Teams @ SPP



The 3 Primary IT Food Groups



Current IT Environment

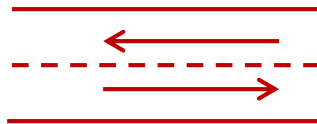
Chenal



Primary **Production**



Data



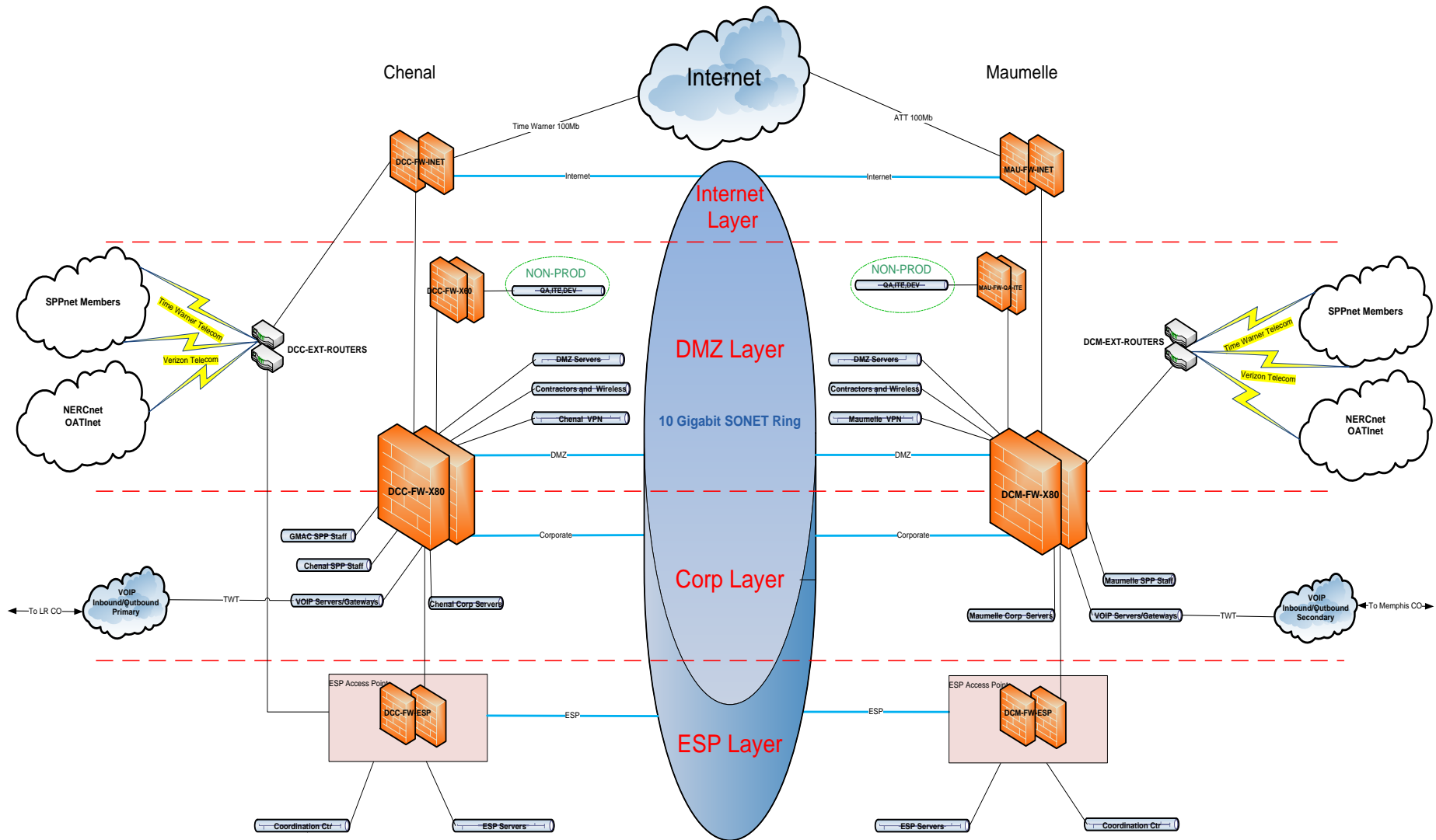
Maumelle



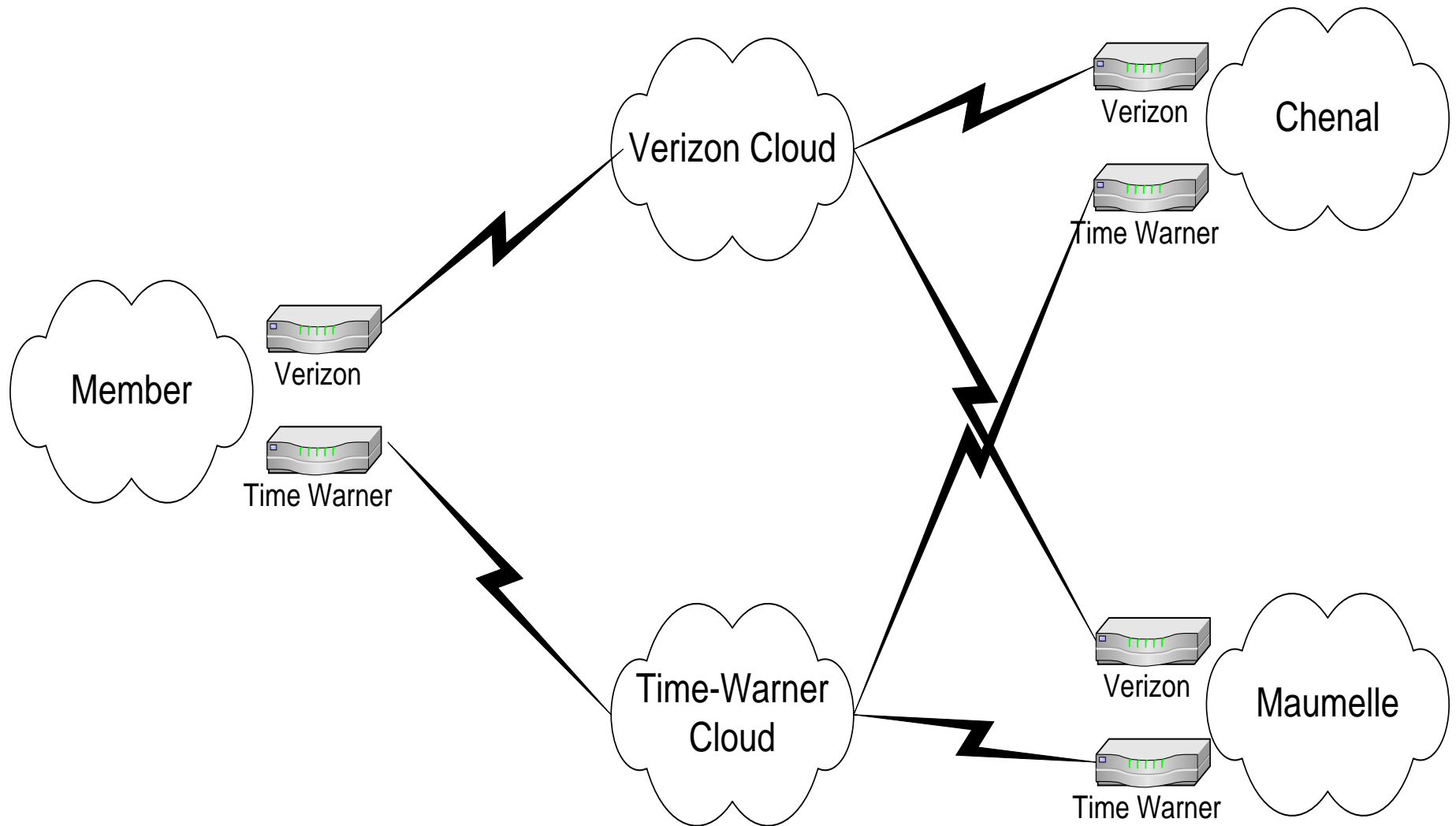
Primary **Backup/Recovery**

Servers (Physical & Virtual)	> 1800
Physical Workstations	> 700
Monitors	> 1200
Virtual Desktop Images (VDI's)	> 500
Data Storage	> 1400 TBs
Offsite Data	> 500 TBs

Communications – SPP Data Centers



Communications – Members



[illegible]

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Cyber Security

- **Web Content Filtering**
- **Intrusion Prevention System**
- **Firewalls**
 - **Multiple vendors**
 - **Different technologies in each network zone**
- **Defense In Depth (segmented network environment)**
- **Vulnerability Scanning and Assessment**
- **Dual Factor Authentication into the Secure Perimeter**
- **Access Lists – IP range Blocking (foreign locations)**



Cyber Security

- Anti-virus / Malware
- Zero day Vulnerability Detection
- Email Scanning / Threat Removal
- Desktop/Laptop Encryption
- Redundancy
 - Independent locations
 - Multiple circuit vendors
 - Network layers
- Deadbolt is Locked
- Social Engineering Awareness



The Future of IT at SPP

- **Vision of IT**
 - Respected Partner with Business
 - Enable the Business with Technology
 - Responsive / Responsible / Accountable / Compliant
- **Strategic Areas**
 - Technology Roadmap / Internal / Vendor / Cloud
 - Continuous Improvement / Efficiencies / Compliance
 - Cyber-Security – Prevent / Respond / Restore
 - Data / Business Intelligence / Accessibility / Analysis
 - Talent Development / Retention



Wrap-Up

