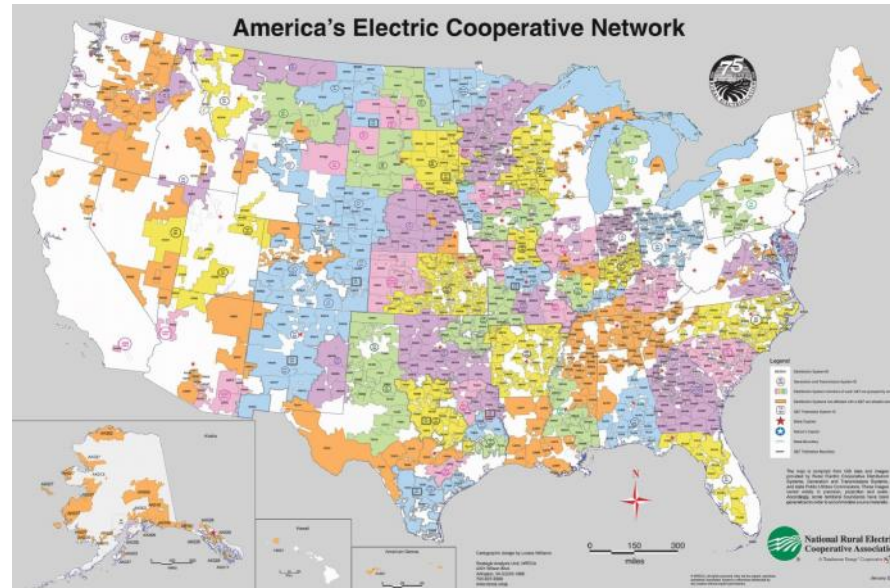


The Agile Fractal Grid in the United States will be an excellent study of partnering, monetization, and enablement.

- The United States will never realize its ambitions for broadband in the rural portions of the country unless it can learn how to share the infrastructure with the electric utilities.
- **Henning Schulzrinne, CTO, FCC**
- Through partnering with the 960 rural electric cooperatives, our program aims to cover over 75% of the land mass of the country for decentralized power, communications, and computing.
- **National Rural Electric Cooperatives Association**
- It is the monetization of the shared infrastructure and the enablement of a multitude of services that makes this expansion practical.





- **Serve 75% of U.S. land mass**
- **43% of all distribution lines in the U.S.**
- **Cooperatives own the poles and have highly skilled crews**



1. Participate in the “Agile Fractal Grid” for the remote equipment and subsystems.
2. Provide a “Digital Marketplace” for operational, analytical, and financial applications for the cooperatives and their tenants.
3. Apply the Security Fabric within the emerging Industrial Internet to protect all communications between the elements.



The individual cooperatives will have multiple choices for individual products or applications.



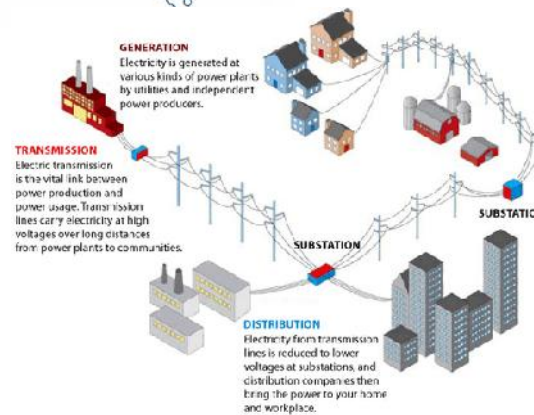
The Three Tiered Fiber Network Build



The Core Quadrants



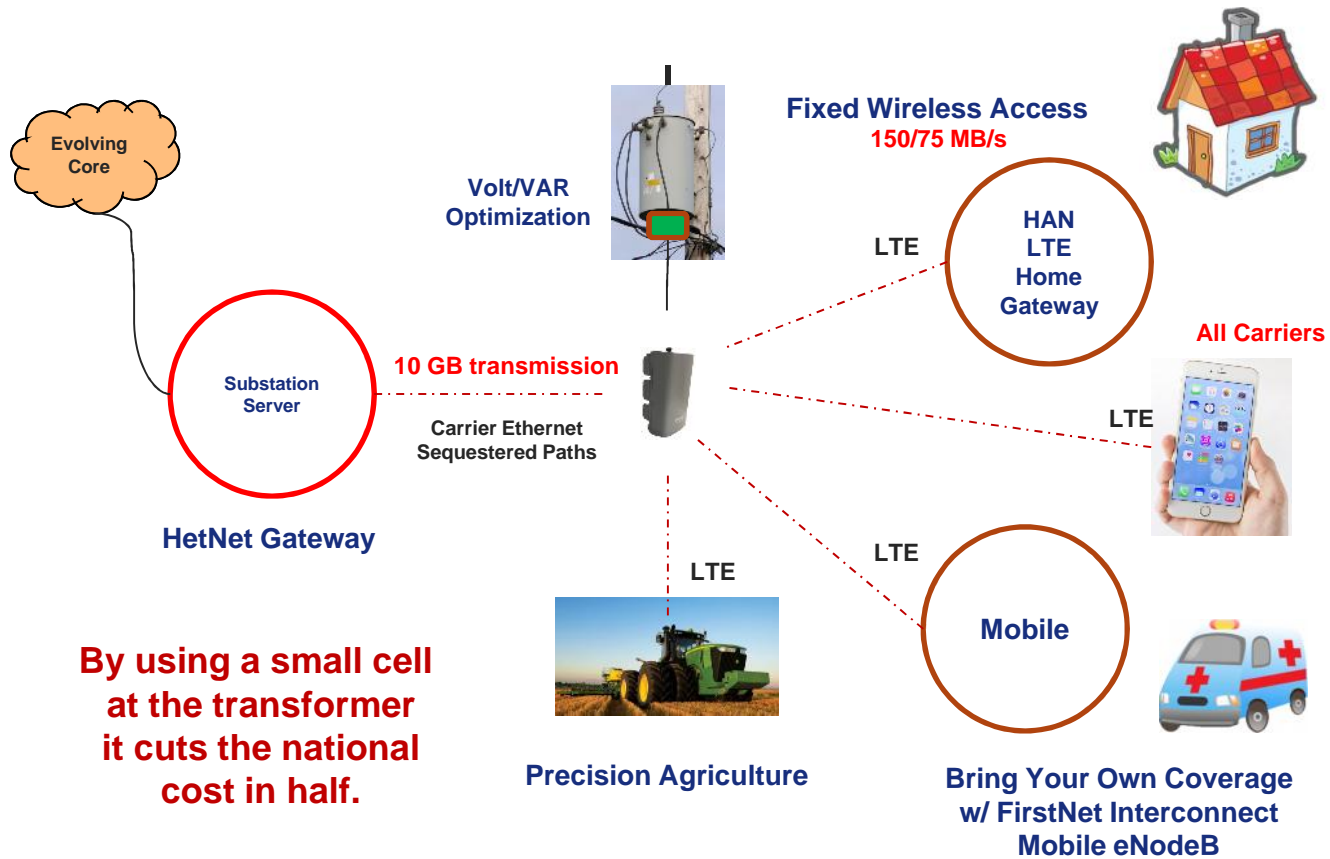
The Regional Takeout



Over a million miles of fiber infrastructure

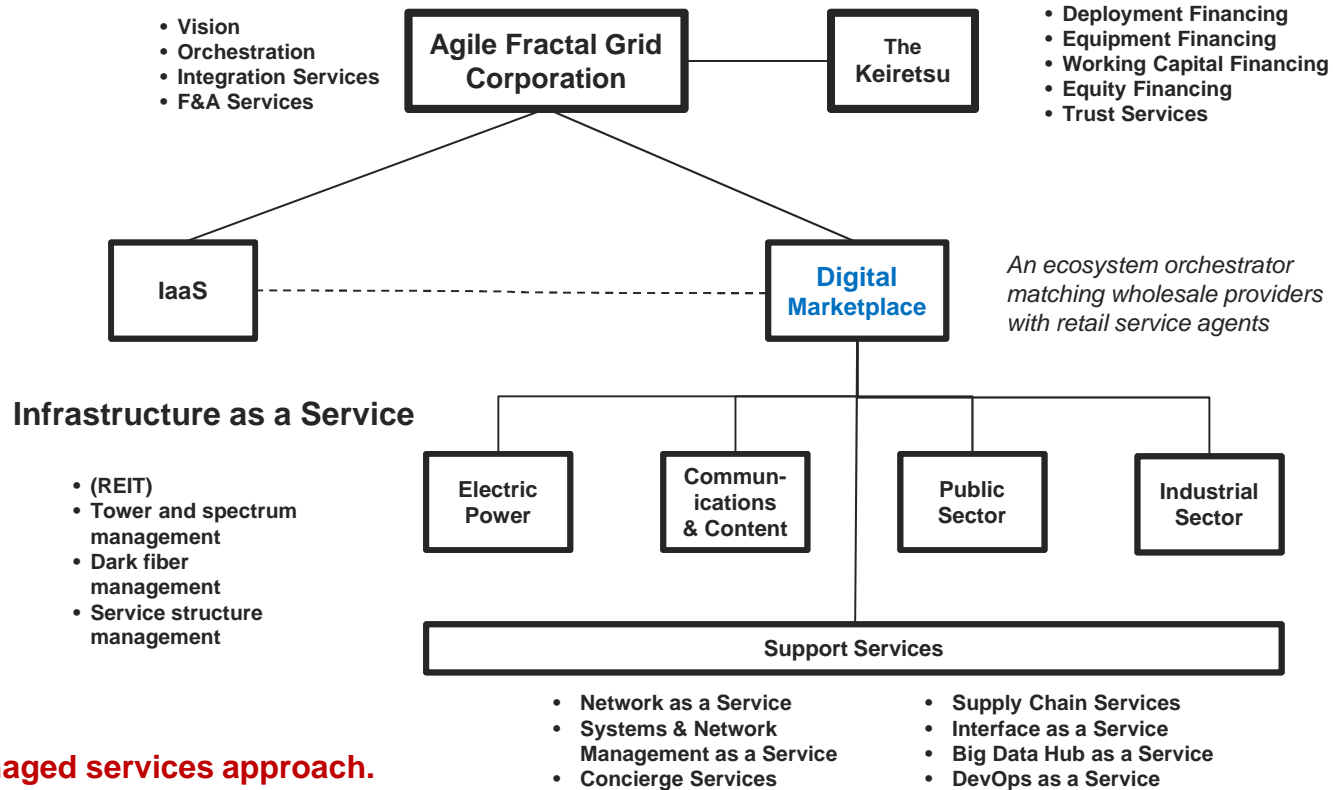
The Local Tertiary Network





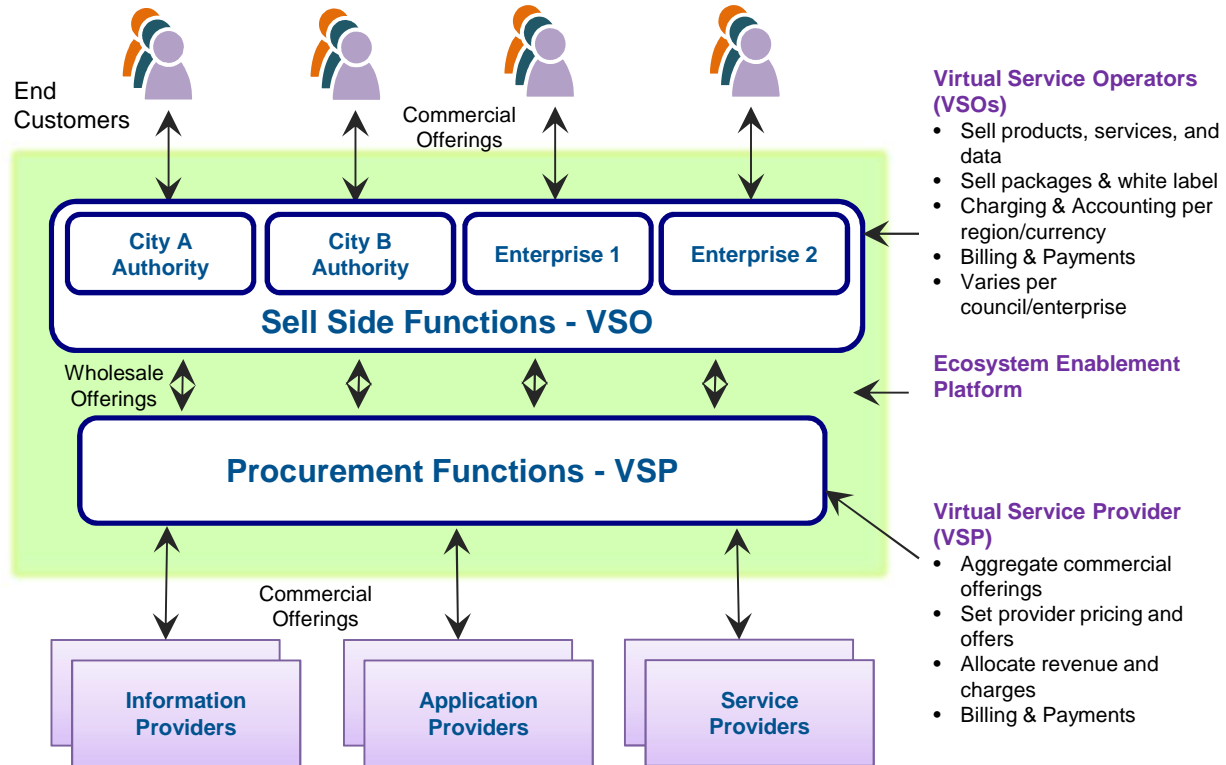
By using a small cell at the transformer it cuts the national cost in half.



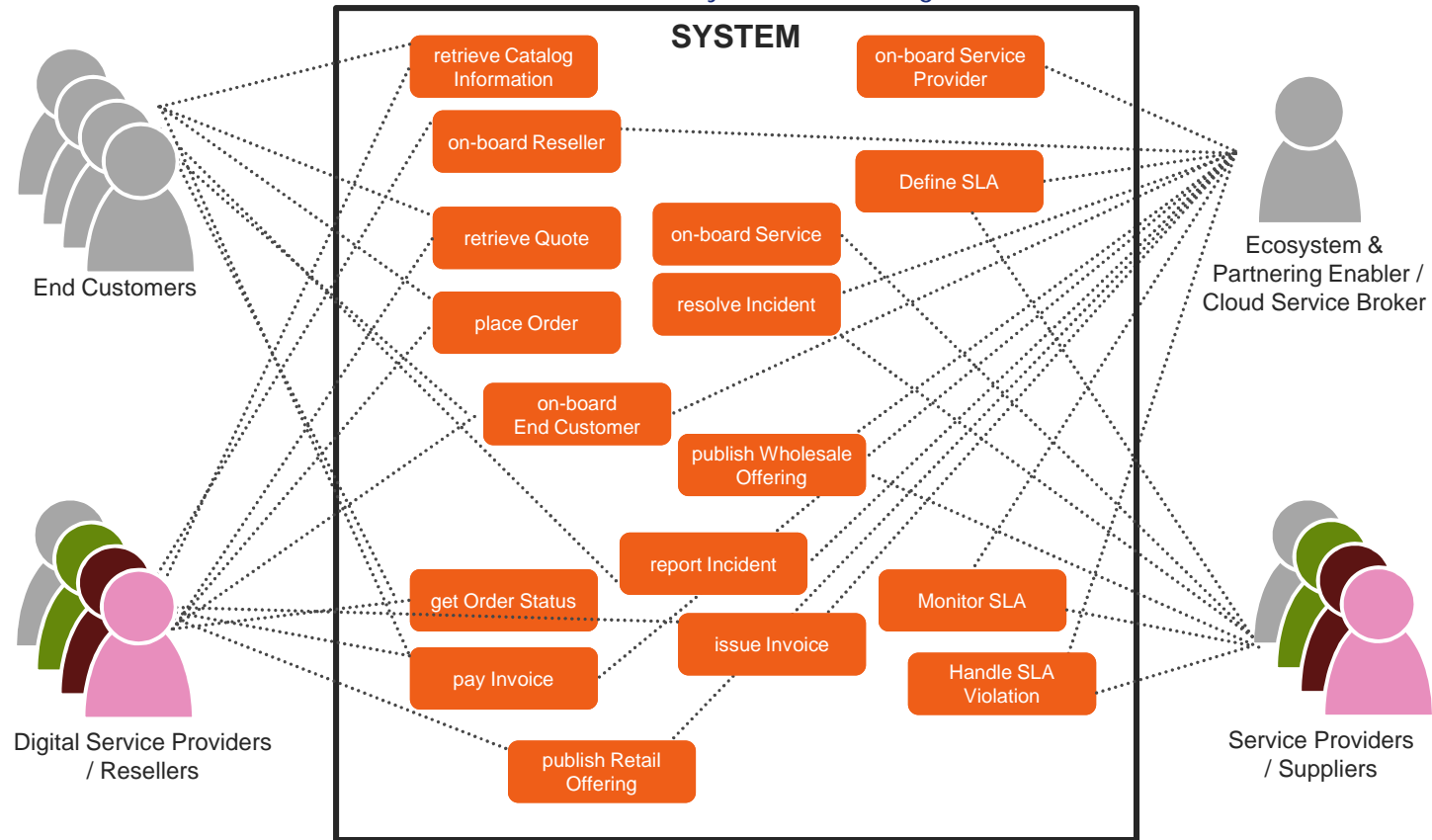


This is a managed services approach.





B2B2x Entity Interaction Diagram



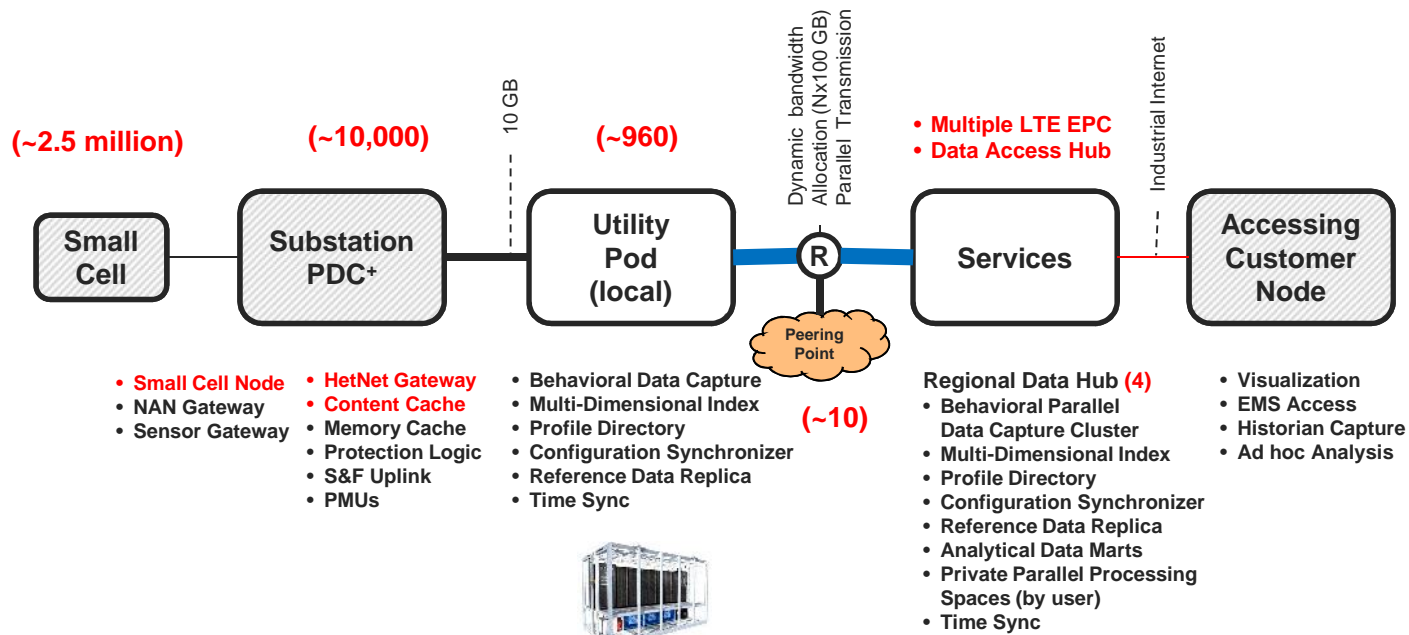
- **Digital Marketplace Home**
 - CEOexpress
 - ElementBlue
 - R6 Ecosystem Orchestrator
 - Force.com
- **Wholesale Communications**
 - Carrier Ethernet
 - Small Cell Neutral Hosting
 - FirstNet Access and Backhaul
 - Fixed Wireless Access
 - Direct Internet Access
 - Cellular Neutral Access Hosting
- **Voice Services**
 - Unified Communications
- **Content Services**
 - Streaming Broadcast
 - On Demand
 - Learning
- **Electric Power**
 - Optimizer – Building
 - Microgrid as a Service
 - Synchrophasor Data Hub
 - Transactive Energy
- **Public Safety as a Service**
 - Emergency Operations Center
 - Incident Management
 - Resource Management
 - Radio Control
 - Video Surveillance
- **Building Automation**
 - Exterior and Interior Systems
 - Building Access
 - HVAC
 - Elevators
 - Digital Signage



- **Concierge Services**
 - Systems Administration
 - Cybersecurity
- **Management as a Service**
 - Situational Awareness
 - OpCenter
 - Fault Management
 - Configuration as a Service
 - Billing as a Service
 - Performance Management as a Service
 - Precision Time as a Service
- **Security as a Service**
 - SIEM
 - ThreatConnect
 - Notifications
 - Cell Broadcast
- **Datacenter as a Service**
 - Virtual Network
 - Storage
 - Virtual Server
- **Data Hub Services**
 - Capture
 - Components & Assembly
 - Analytics
- **Interface as a Service**
 - Interfaces
 - Message Translation
 - Workflow
 - Asynchronous Events
- **DevOps as a Service**
 - Parallel Build Pipeline
 - Environmental Smoke Test
 - Continuous Delivery
- **Supply Chain Services**



Conceptual End-to-End Approach

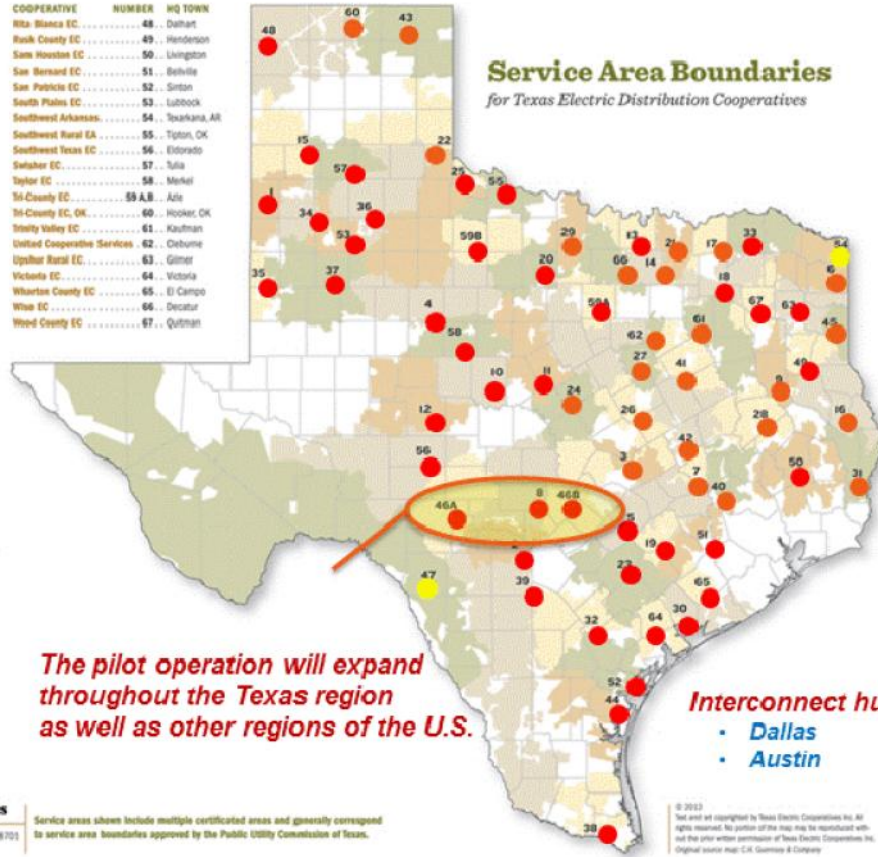




The pilot is at the largest of all cooperatives.

COOPERATIVE	NUMBER	HQ TOWN
Bailey County ECA	1	Mulvosh
Bandera EC	2	Bandera
Barlett EC	3	Barlett
Big Country EC	4	Rely
Blanton EC	5	Bascom
Bowie-Cass EC	6	Douglasville
Bryan Texas USBes	7	Bryan
Central Texas EC	8	Friedrichsburg
Cherokee County ECA	9	Rusk
Coleman County EC	10	Coleman
Comanche EC	11	Comanche
Cooke Valley EC	12	San Angelo
Cooke County ECA	13	Muenster
Codomo Electric	14	Corinth
Deaf Smith EC	15	Hersford
Deep East Texas EC	16	San Augustine
Fannin County EC	17	Bonham
Farmers EC	18	Greenville
Fayette EC	19	La Grange
Fort Belknap EC	20	Olney
Grayson-Cottle EC	21	Van Alstyne
Greenbelt EC	22	Wellington
Guadalupe Valley EC	23	Gonzales
Hamilton County ECA	24	Hamilton
Harmon EA	25	Halls, OK
Heart of Texas EC	26	McGregor
WILCO EC	27	Itasca
Houston County EC	28	Crockett
J-A-C EC	29	Bluegrove
Jackson EC	30	Edna
Jasper-Newton EC	31	Kittyville
Karnes EC	32	Karnes City
Lamar County ECA	33	Paris
Lamb County EC	34	Littlefield
Lea County EC	35	Lovington, NM
Lighthouse EC	36	Floydada
Lynbarger EC	37	Taloka
Magic Valley EC	38	Mercedes
Medina EC	39	Hondo
Mid-South Synerg	40	Navasota
Navarro County EC	41	Corsicana
Navasota Valley EC	42	Franklin
North Plains EC	43	Perryton
Nueces EC	44	Robstown
Panola-Harrison EC	45	Marshall
Pedernales EC	46 A, B	Johnson City
Rio Grande EC	47	Brackettville

COOPERATIVE	NUMBER	HQ TOWN
Wta Blanca EC	48	Dumas
Rusk County EC	49	Henderson
Sam Houston EC	50	Livingston
San Bernard EC	51	Belville
San Patricio EC	52	Sinton
South Plains EC	53	Lubbock
Southwest Arkansas	54	Texarkana, AR
Southwest Rural EA	55	Tipton, OK
Southwest Texas EC	56	Eldorado
Svalter EC	57	Tulia
Taylor EC	58	Merkel
Tri-County EC	59 A,B	Able
Tri-County EC, OK	60	Hooker, OK
Trinity Valley EC	61	Kaufman
United Cooperative Services	62	Debunne
Uppsher Rural EC	63	Gilmer
Victoria EC	64	Victoria
Wharton County EC	65	El Campo
Wise EC	66	Decatur
Wood County EC	67	Quitman



Service Area Boundaries for Texas Electric Distribution Cooperatives

The pilot operation will expand throughout the Texas region as well as other regions of the U.S.

Interconnect hubs:

- Dallas
- Austin

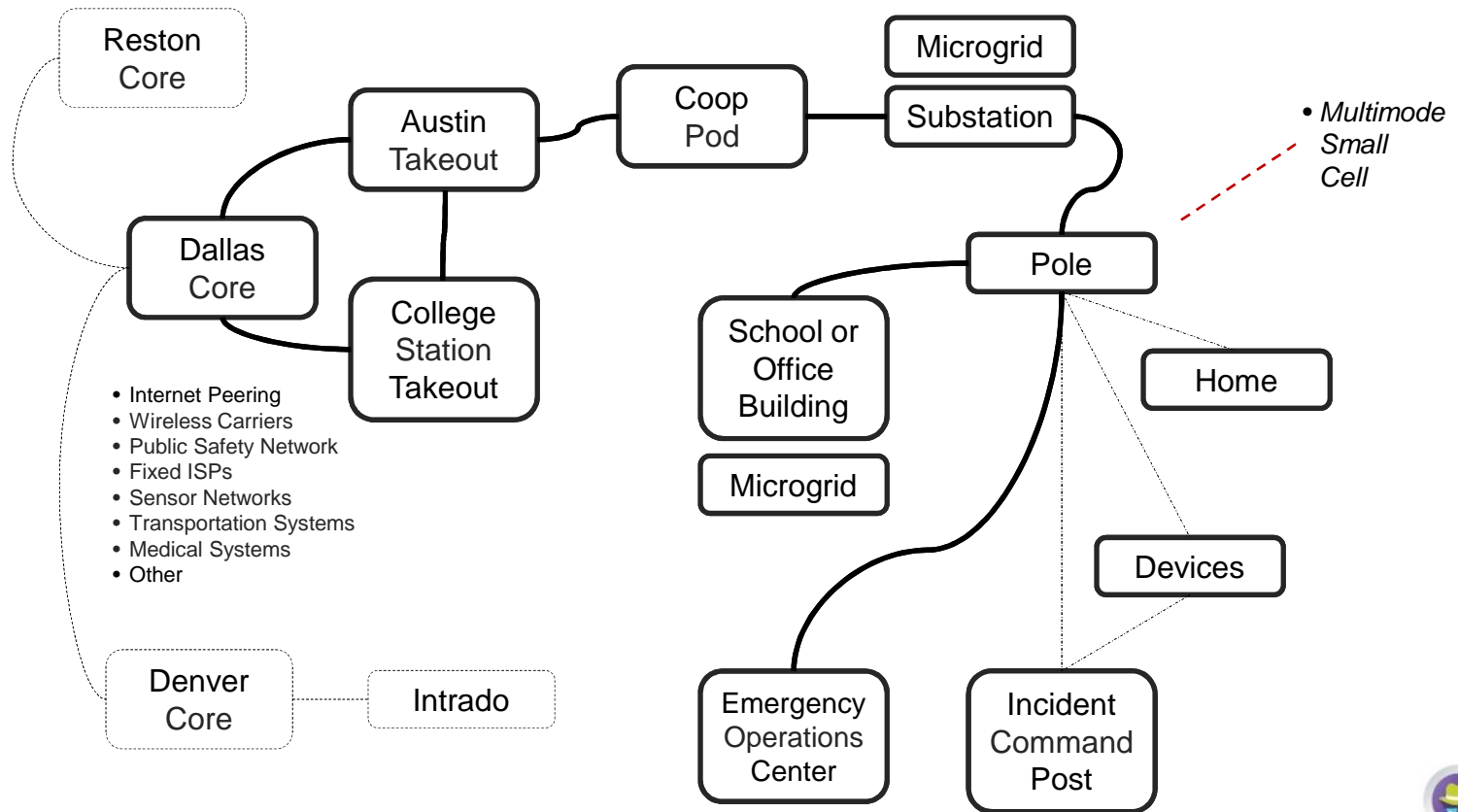
Texas Electric Cooperatives
 1522 Colorado St., 24th Floor • Austin, TX 78701
 (512) 454-0311 • www.tecsc.org

Service areas shown include multiple certificated areas and generally correspond to service area boundaries approved by the Public Utility Commission of Texas.

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The initial pilot network covers all three tiers.



Leveraging Partnering, Orchestration, Monetisation

& Ecosystem Enablement

The Agile Fractal Grid:

**Truly a next generation architecture
for next gen products and services.**



