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## Session B1: The Open Last Mile

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Greg Whelan  
[gwhelan@magellan-advisors.com](mailto:gwhelan@magellan-advisors.com)

THIRD ANNUAL(ISH)  
**MAINE BROADBAND SUMMIT:**  
*We Can Get There From Here*



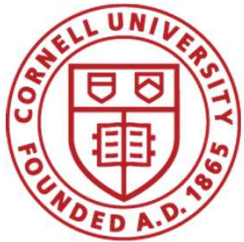
**Session B1: The Open Last Mile**



## Agenda

- What Communities Need
- The Broadband Stack
- Broadband Operating Models
- Who Can Participate?

## Broadband Background

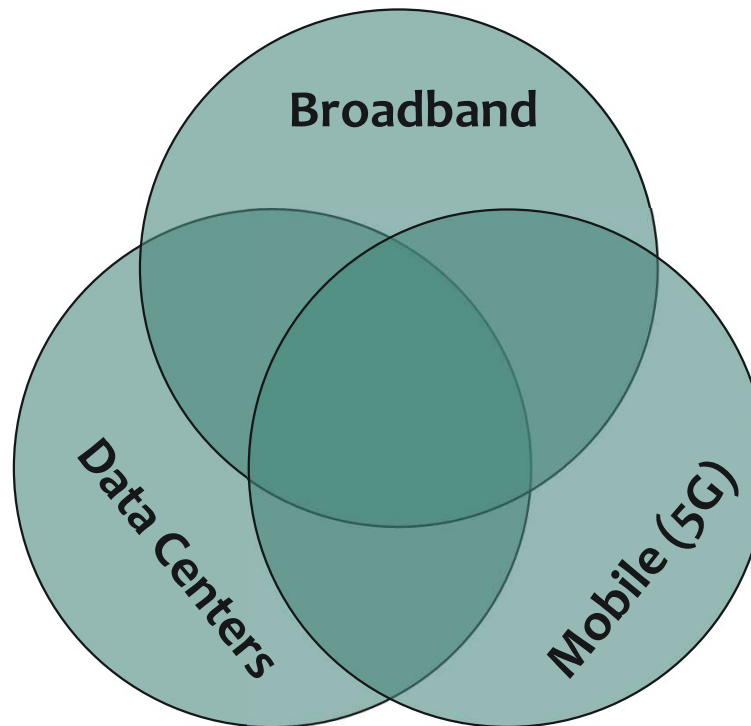


MIT Communications Futures Program



# What Do Communities Need?

## What Communities Need: Local Digital Infrastructure



### Data Centers

- Abundant **middle mile** bandwidth to The Edge
- Bring The Edge to you

### Broadband

- 2-3 Gigabit broadband providers
- 100% coverage

### Mobile

- 5G Coverage by Big 3
- Towers & Small Cells

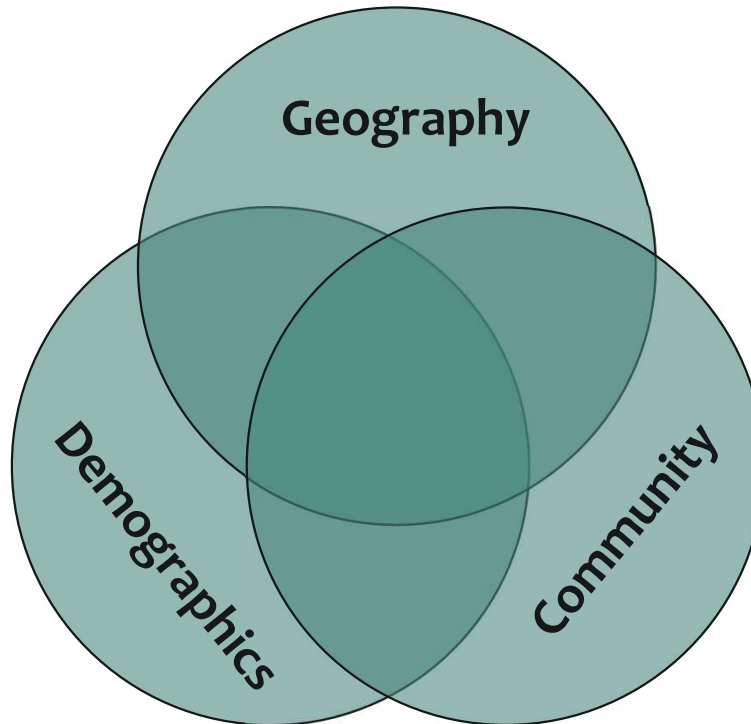
## Every Community is Different

### Geography

- Urban
- Suburban
- Rural

### Demographics

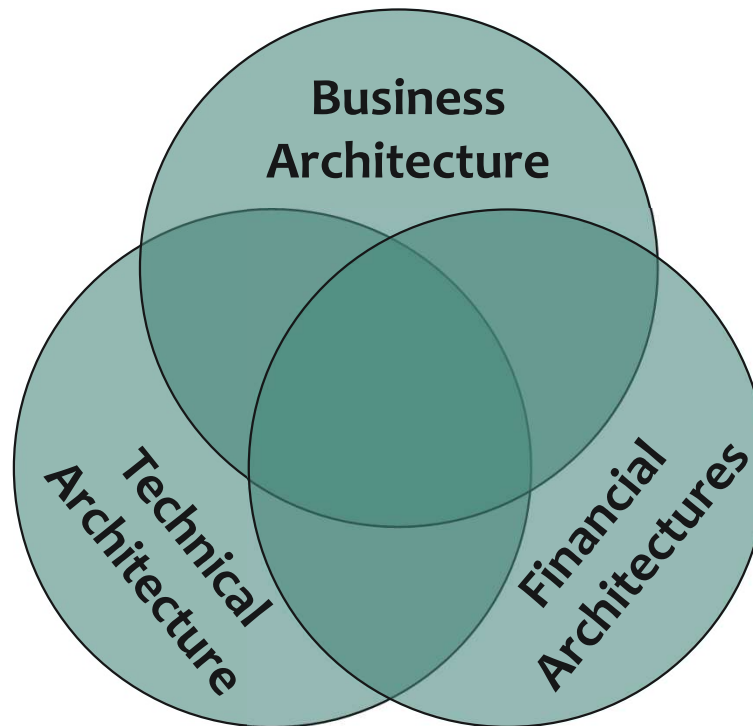
- Housing SFUs/MDUs
- Affluence
- Digital Literacy
- Installed base



### Community

- Leadership
- Community Needs
- Regulations (Federal, State, County)
- Political Will

# Every Broadband Network is Different



## Technical Architecture

- FTTP, HFC
- Point-to-Point or xPON
- 5G, Fixed Wireless
- Satellite

## Business Architecture

- Triple-Play Bundle
- Retail ISP
- Lit Open Access
- Dark Fiber REIT

## Financial Architecture

- Debt (Bonds, Convertibles, etc.)
- Equity (Preferred and Common)
- Grants (Federal and State)

# The Broadband Stack



## Broadband Stack

**Retail Internet Service  
Providers**

**Active Infrastructure**  
Layer 1 & 2 Circuits

**Passive Infrastructure**  
Dark Fiber/Conduit (Layer 0)

**Each layer is challenging, has different financials and requires disparate skills**

## Broadband Stack

### Retail Internet Service Providers

- Operates Internet Protocol (IP) routers (Layer 3)
- Responsible for marketing, customer support, in-home (Wi-Fi), etc.

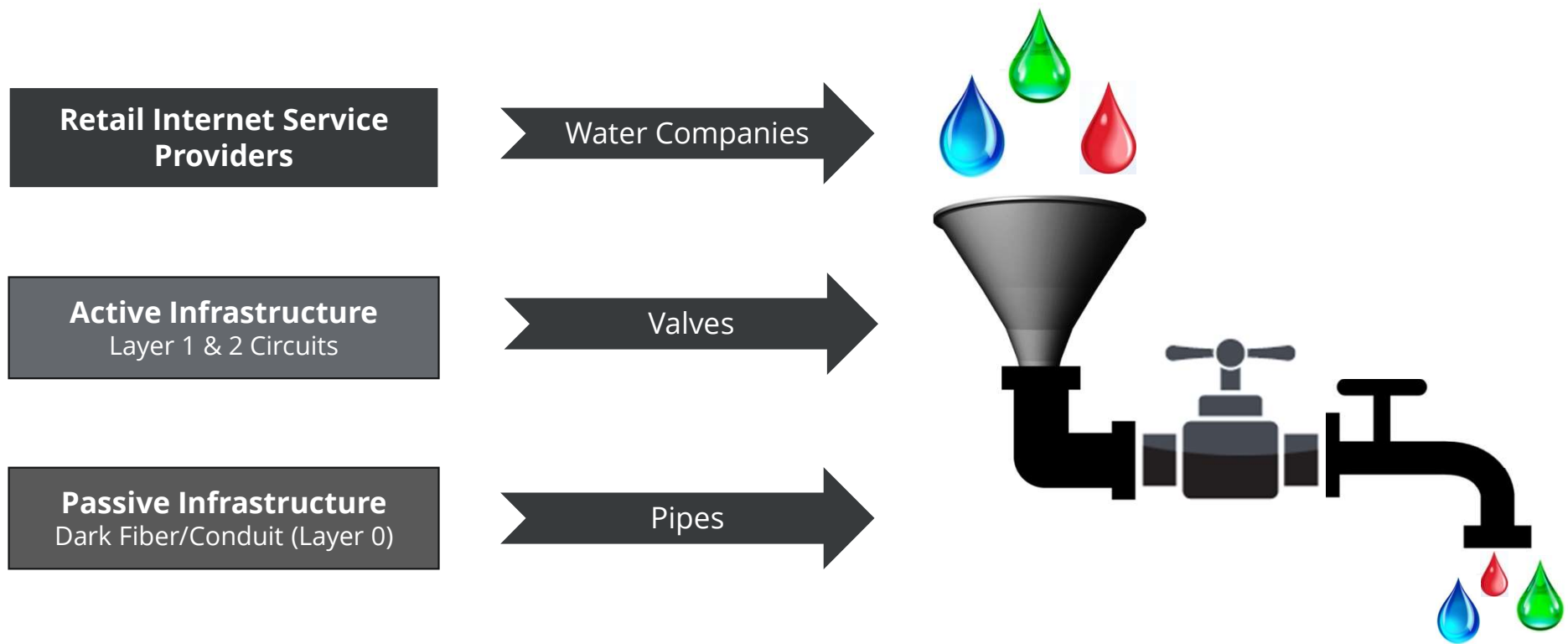
### Active Infrastructure Layer 1 & 2 Circuits

- Lights the fiber (Layer 1)
- Provides local (Layer 2) connections (e.g., Ethernet VLANs)

### Passive Infrastructure Dark Fiber/Conduit (Layer 0)

- Conduit, poles and dark fiber (Layer 0)
- Funds, owns and maintains passive infrastructure

## Broadband Stack: Water System Analogy



# Broadband Operating Models

Who Owns and Operates What?

# Broadband Operating Models

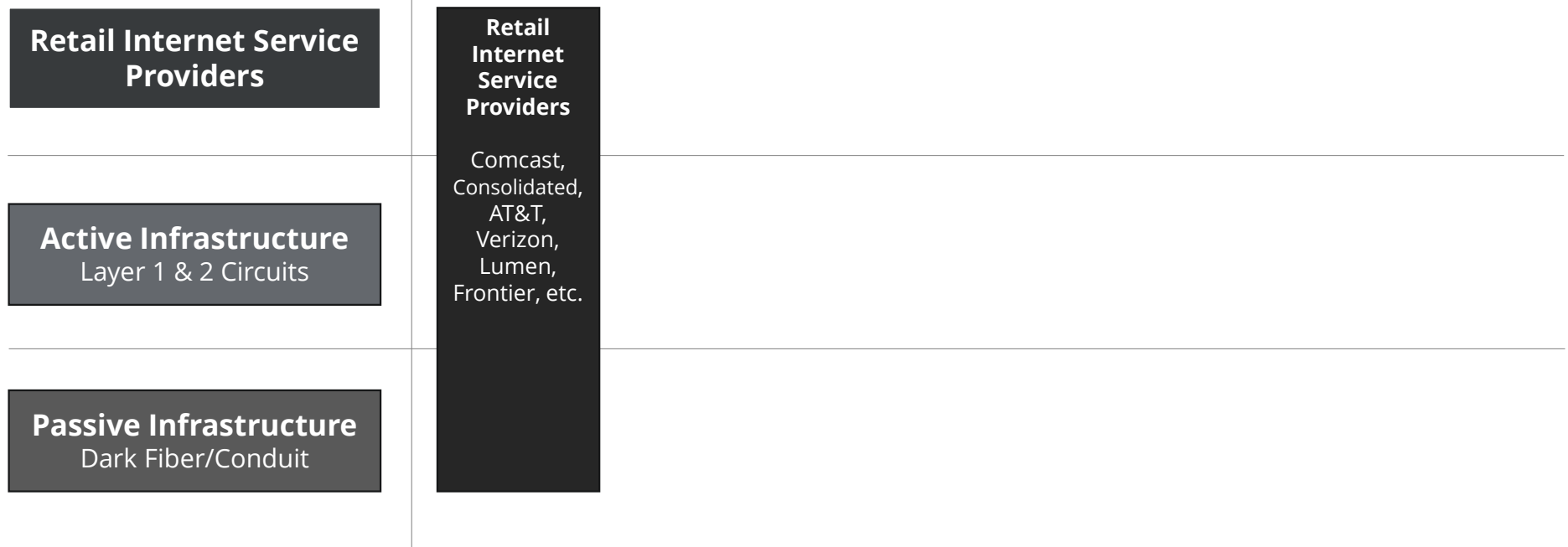
## Who Owns and Operates What?

**Retail Internet Service Providers**

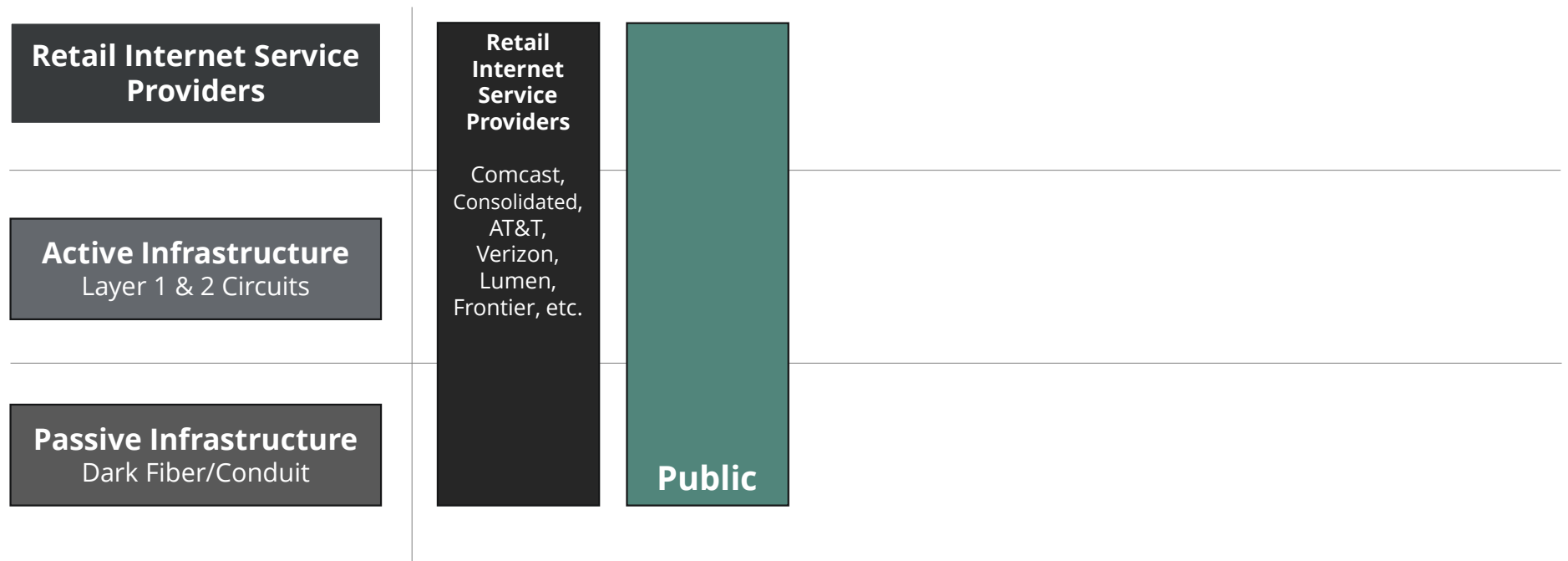
**Active Infrastructure**  
Layer 1 & 2 Circuits

**Passive Infrastructure**  
Dark Fiber/Conduit

## Broadband Operating Models Who Owns and Operates What?

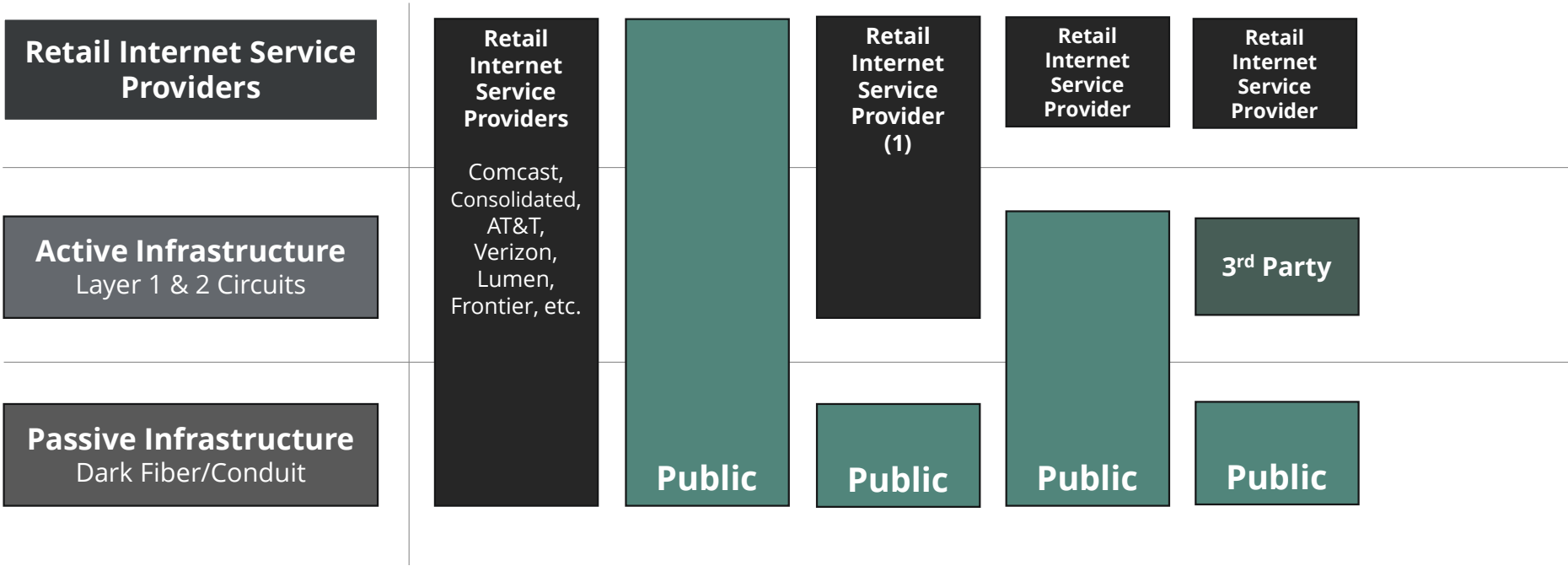


## Broadband Operating Models Who Owns and Operates What?



# Broadband Operating Models

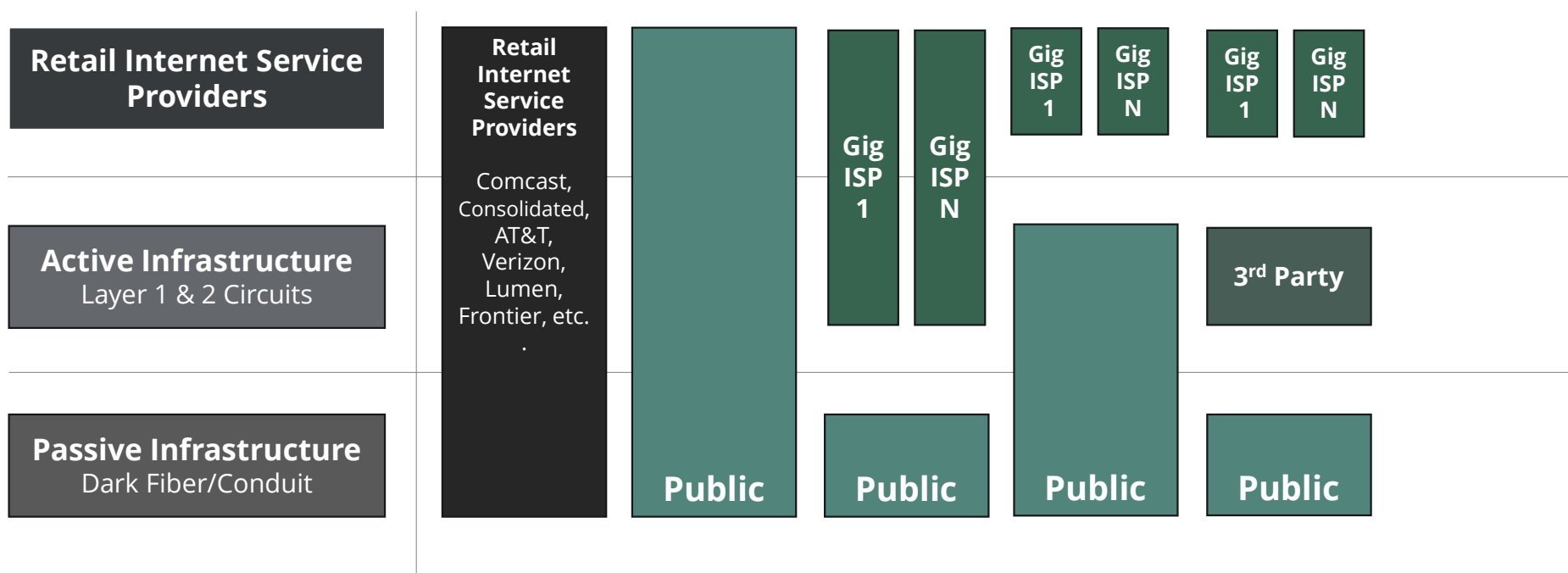
## Who Owns and Operates What?





# Broadband Operating Models

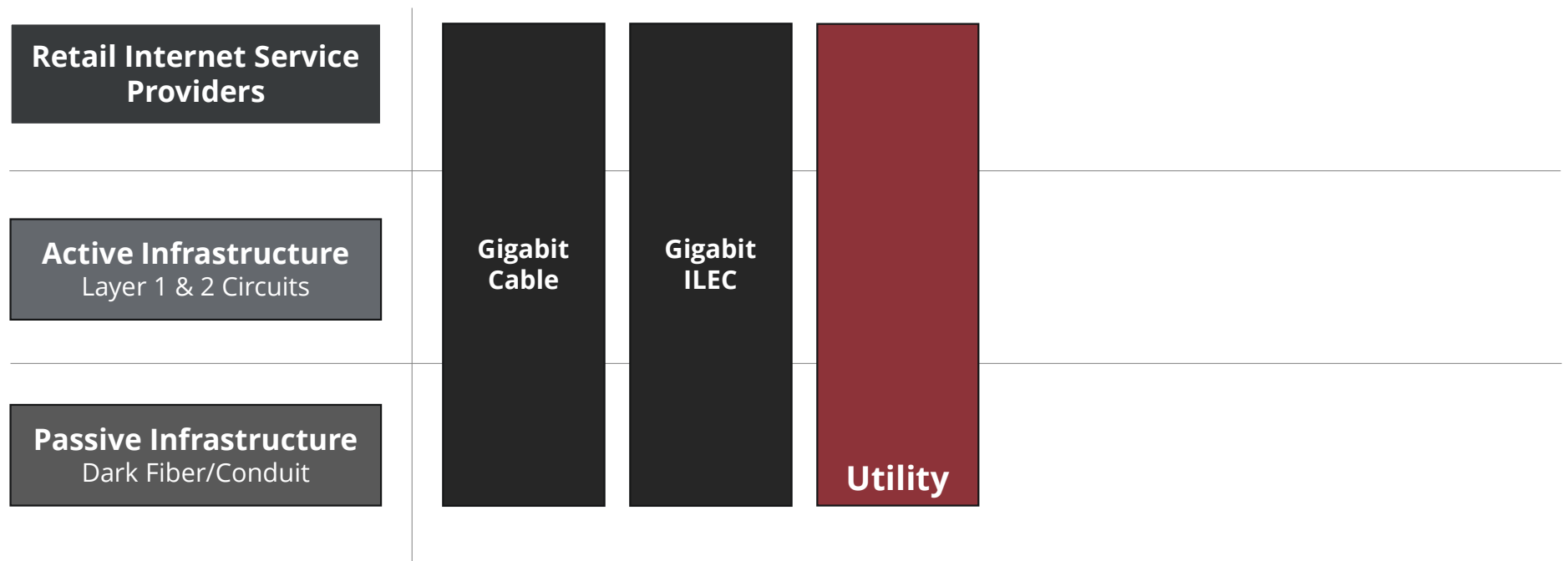
## Who Owns and Operates What?



# Broadband Landscape

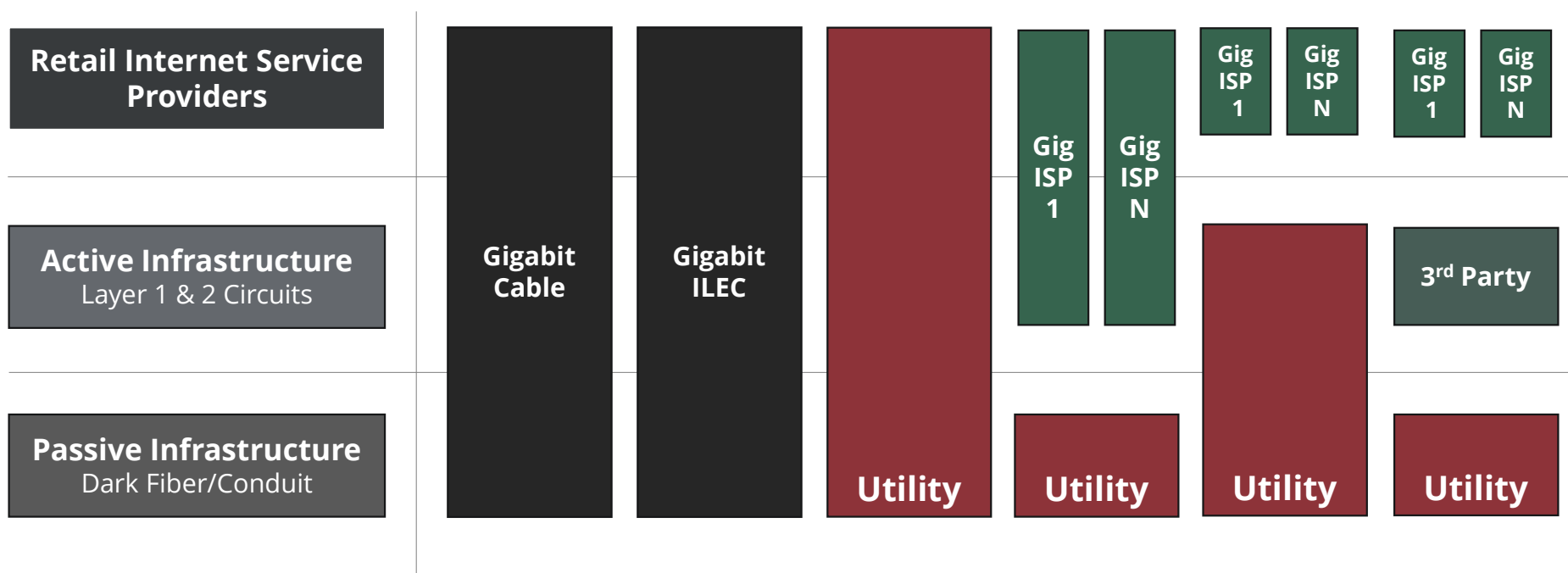
## Who Else Can Participate?

## Broadband Landscape New Entrant - Public or Private Utility



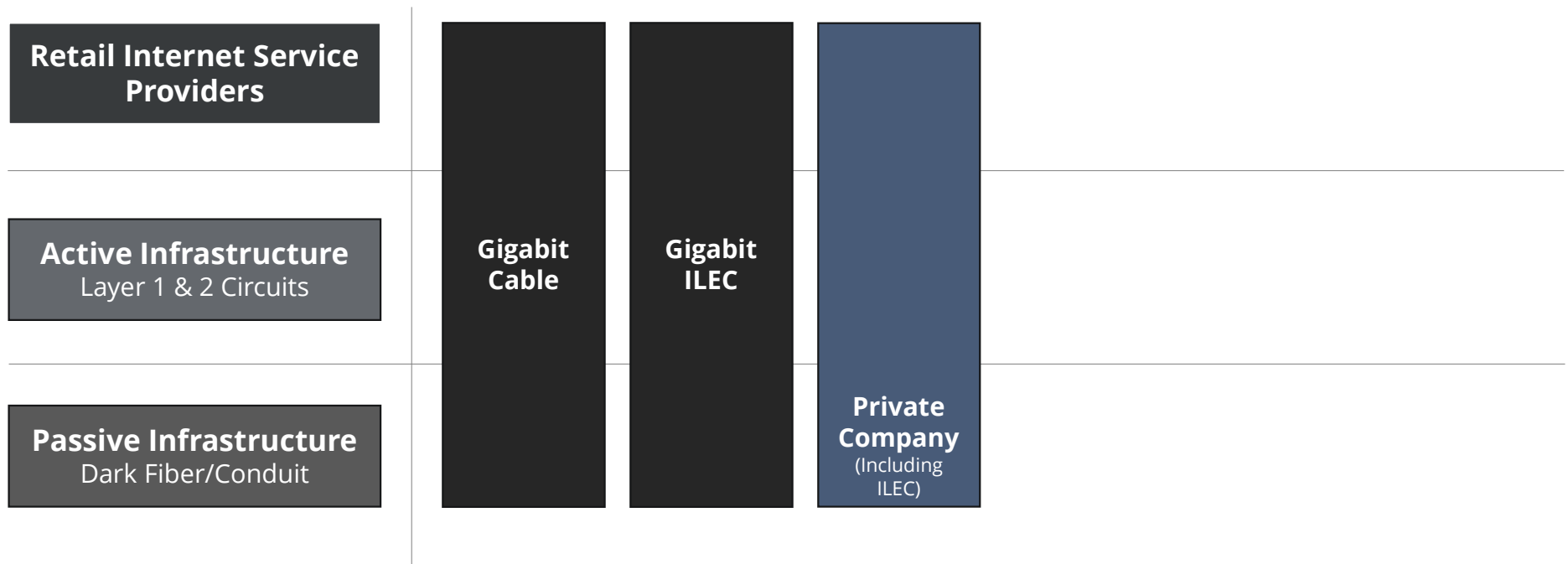
# Broadband Landscape

## New Entrant - Public or Private Utility



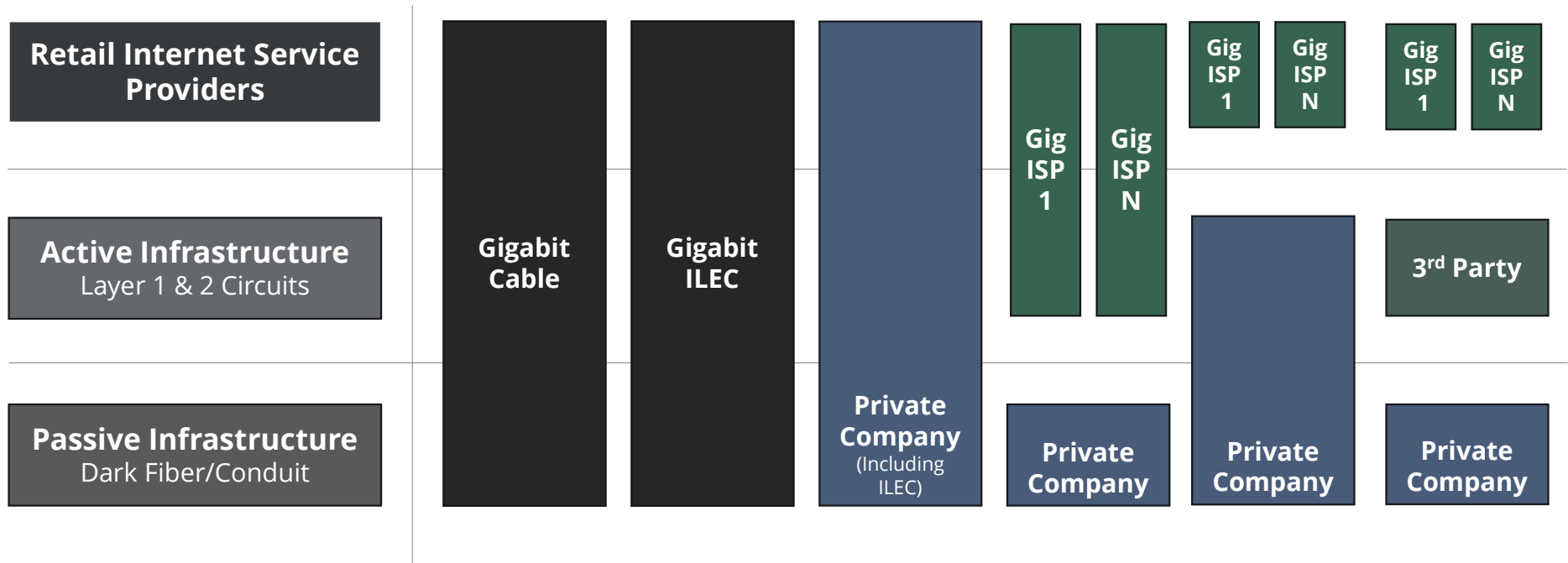
# Broadband Landscape

## New Entrant - Private Fiber Company



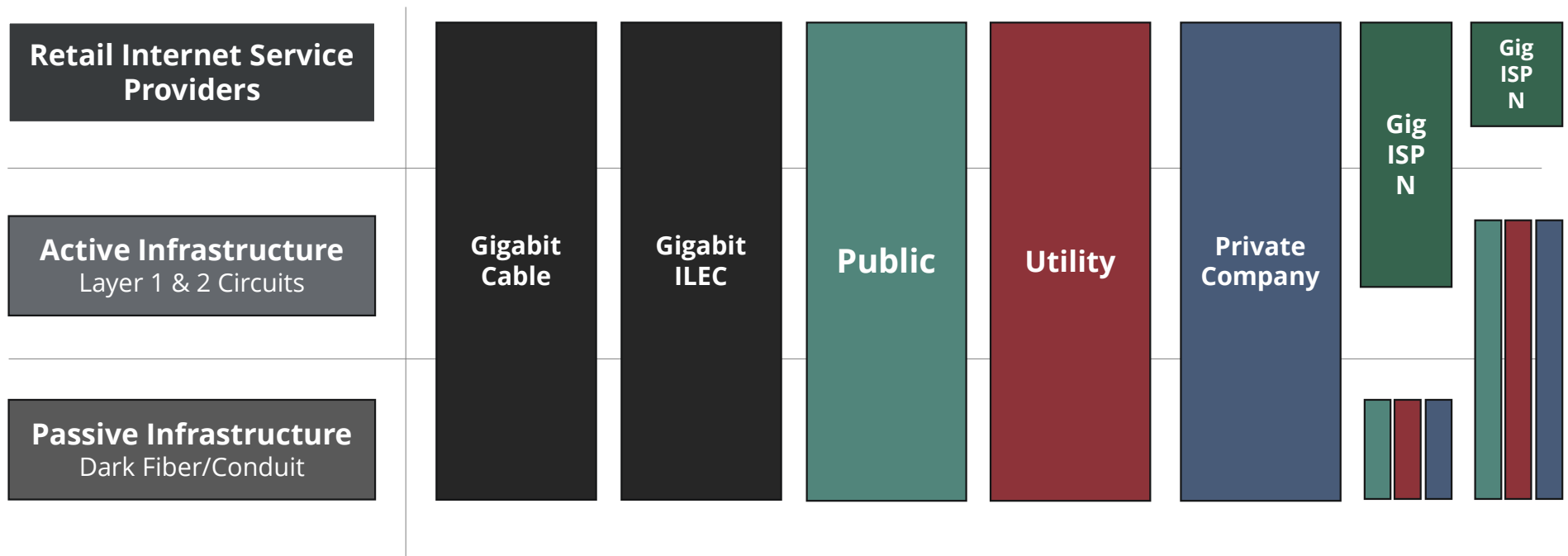
# Broadband Landscape

## New Entrant - Private Fiber Company



# Broadband Landscape

## Lots of Participants and Models



## Summary

- Every community needs local digital infrastructure
    - Every community is different
  - There's lots of ways local governments can participate ranging from policy only to do it all
  - There are many models and many participants
    - Utilities can have an important role
    - New private companies are viable
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# Thank You

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