PENNSYLVANIA TURNPIKE COMMISSION
BROADBAND PUBLIC-PRIVATE PARTNERSHIP

Transportation Engineering and Safety Conference
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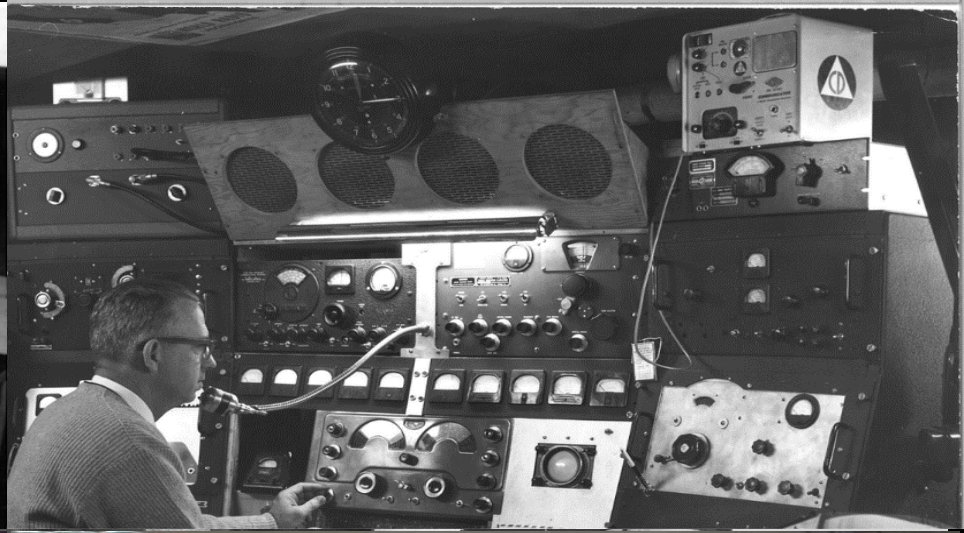
AGENDA

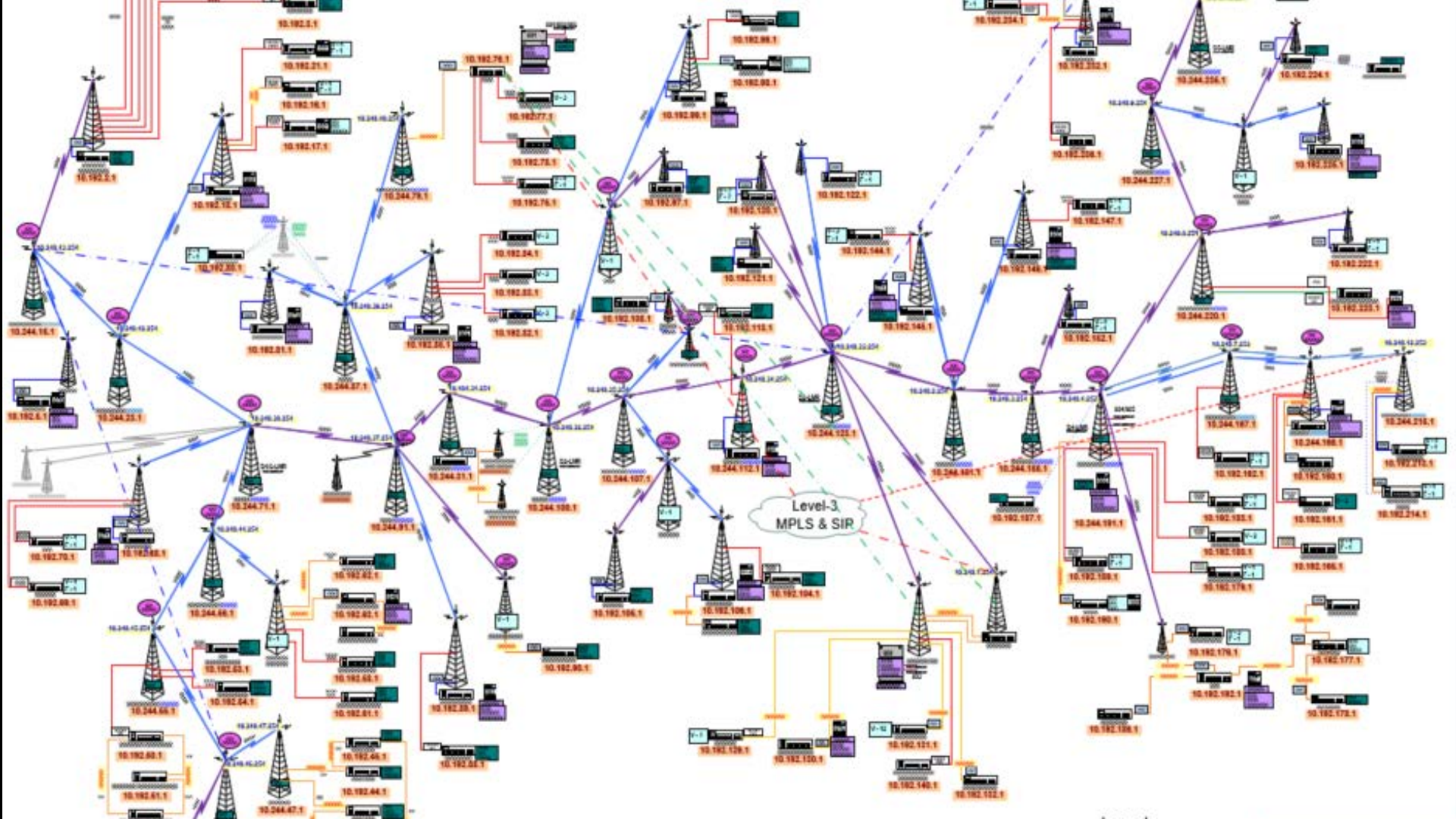
- Project Needs
- Commission Objectives
- Private Sector Objectives
- Key Aspects of the Partnership
- Risk Allocation
- Future-Proofing the Project
- Lessons Learned

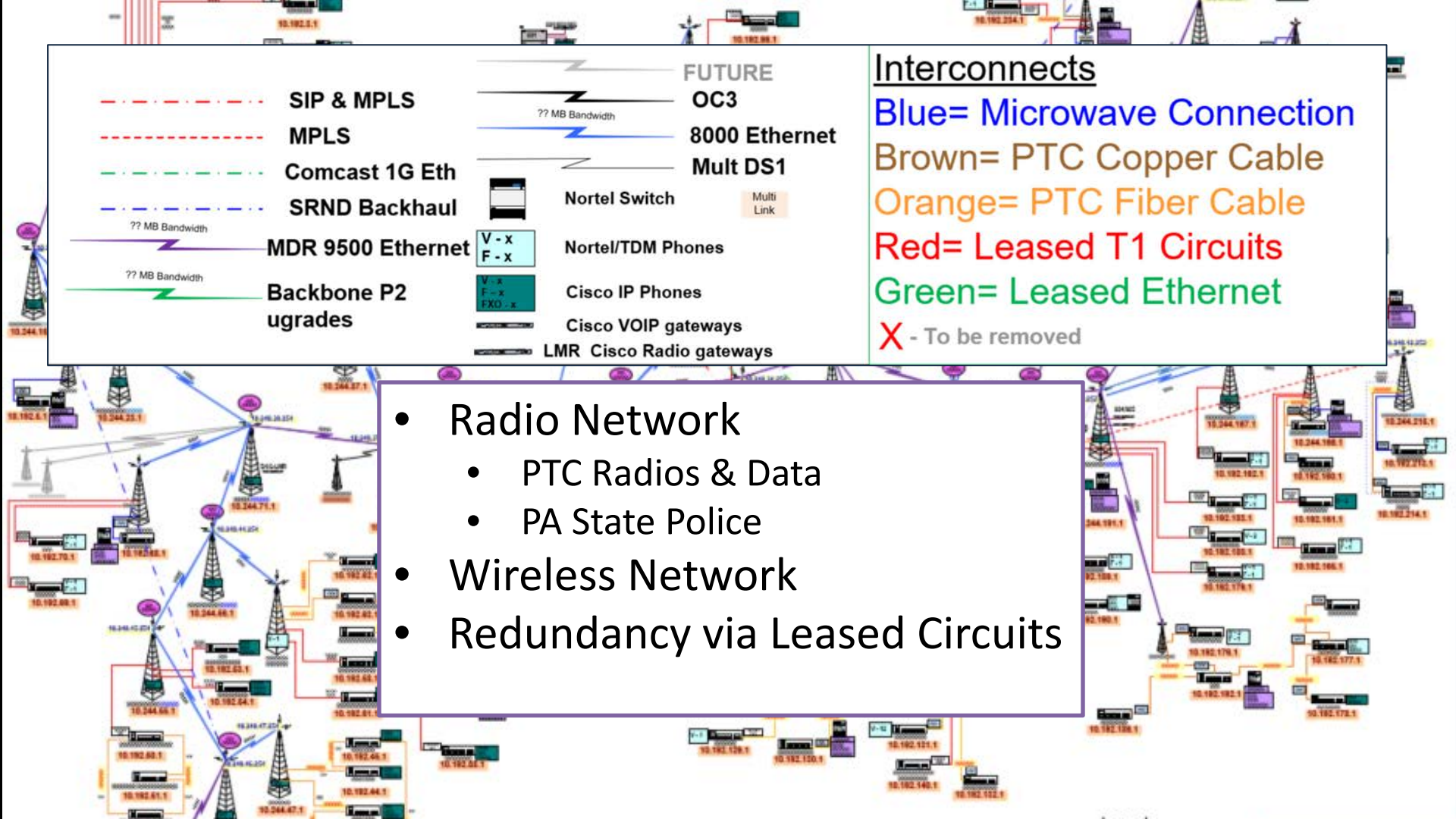
Project Needs




DISTRICT 1
DISTRICT 2
DISTRICT 3


STATE POLICE


Level-3
MPLS & SIR



- Radio Network
  - PTC Radios & Data
  - PA State Police
- Wireless Network
- Redundancy via Leased Circuits

COMMUNICATIONS EXPANSION CHALLENGES

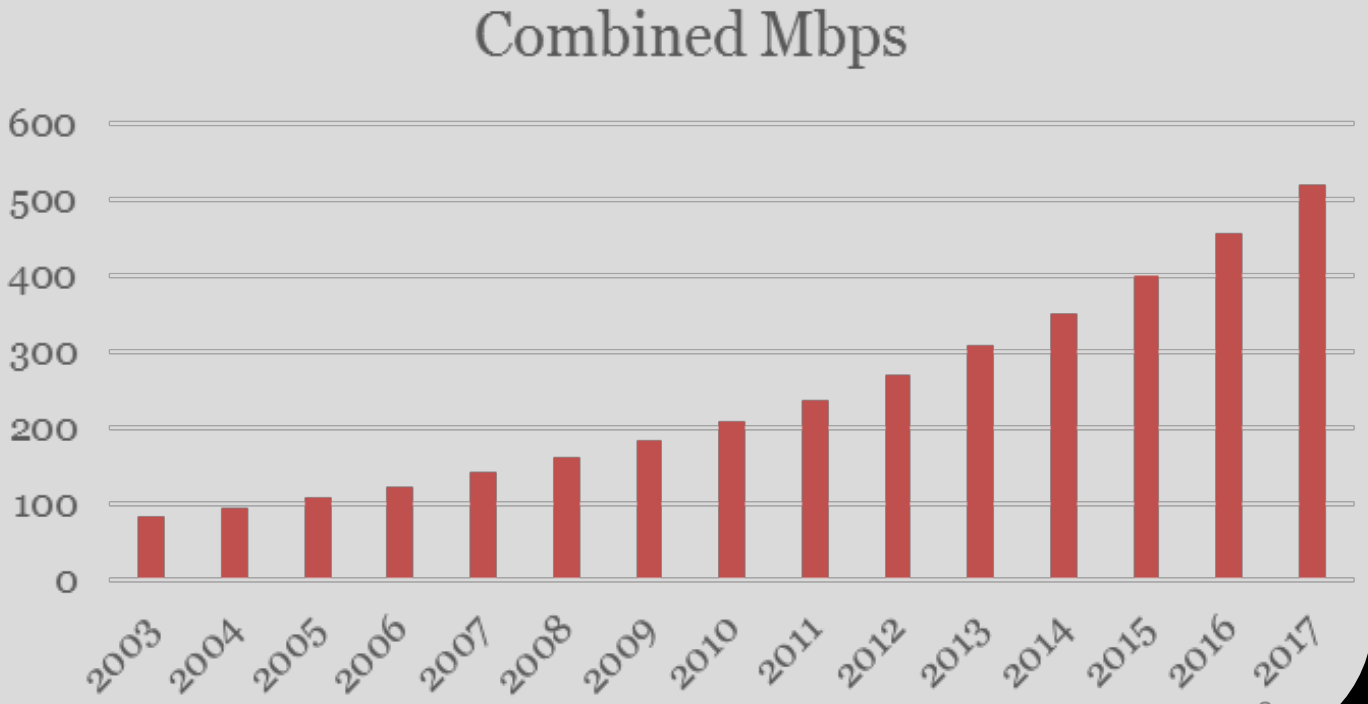
- Limited infrastructure capacity available – upgrading from 500 Mbps to 1 Gbps but not enough
- No more microwave spectrum to purchase
- High cost of repairs and leased bandwidth
- Capacity life – approximately 7 more years
- Limited geographic flexibility for future high-bandwidth devices

TECHNOLOGY GROWTH

14%
per year average bandwidth growth since 2003

24%
per year average new device growth

212%
per year average data storage growth



EMERGING NEEDS

- Cashless Tolling
- ITS Device Expansion
- Connected/ Autonomous Vehicles (CAV)
- Unplanned Future Needs

CASHLESS TOLLING

Scheduled Implementation

Mainline Cutover
October 2022

ITS DEVICE EXPANSION

Device	Locations	Existing	Construction	Planned
Dynamic Message Signs (DMS)	• Interchanges – Located on approach roads to PTC interchanges • Tunnels – Located prior to entering tunnels	90	64	61
CCTV	• Interchanges • Urban Areas –every mile where fiber is present • Tunnels and Bridges • High Crash Locations • Mobile Applications –mobile CCTV and UAV	65	11	11
RWIS	As needed and per 2007 PennDOT RWIS Study	22	1	1

- ITS Western Extension Needs Study
- ITS Gaps Study - Crash Cluster and Weather Needs
- Truck Parking System
- Tunnel Traffic Management Systems

ALTERNATIVES CONSIDERED

- Lease Bandwidth
  - Ease of implementation
  - Risks transferred to private sector
  - Annual cost per location
  - Limited control over future increases
  - Limited flexibility for future applications

ALTERNATIVES CONSIDERED

- Commission Project – Design Build
  - Exclusive ownership and control
  - Commission incurs 100% of capital and O&M costs
  - Additional resources needed to operate and maintain

ALTERNATIVES CONSIDERED

- P3 Procurement
  - Design, Build, Finance, Operate & Maintain (DBFOM)
  - Private sector generates revenue that translates to savings for the Commission
  - Accelerated delivery
  - Enables innovation
  - Shared risk

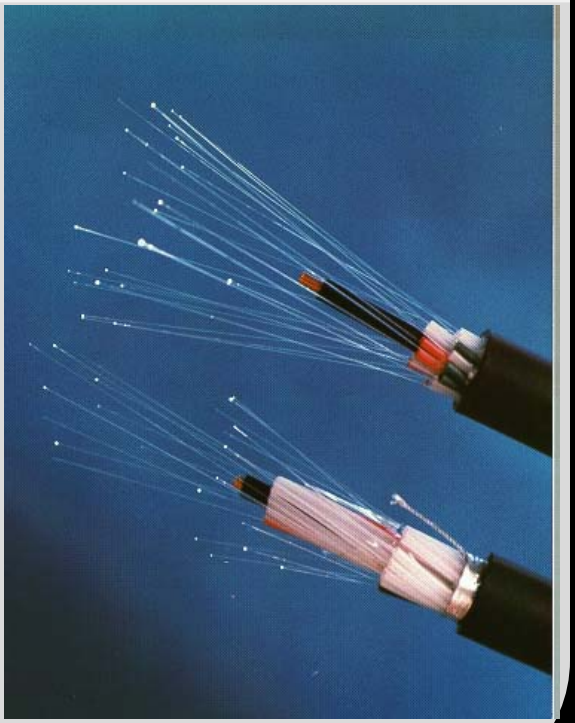
Commission Objectives

COMMISSION OBJECTIVES

- O&M efficiencies moving data from towers to fiber
- Maintain Commission subsidy within maximum limit
- Address long-term bandwidth needs (capacity)
- Provide maximum flexibility for unforeseen high-bandwidth deployments (network accessibility)
- Capitalize on value of ROW to private sector and reduce cost to Commission
- Shared risk

BROADBAND FIBER OPTIC NETWORK

- Fiber – 288 strands for PTC
- Spare conduits for future use
- Highly accessible network
  - 100+ demarcation sites
  - Distribution boxes every 2,400’
- Fiber O&M by Development Entity
- 35-year term P3 agreement



Private Sector Objectives

PRIVATE SECTOR OBJECTIVES

- Scope alignment with commercialization
- Schedule in sync with market timing
- Cost predictability – O&M and Capital
- Acceptable rate of return on investment
- Shared risk

Key Aspects of the Partnership

KEY ASPECTS OF THE PARTNERSHIP

The Development Entity will…

- Design & acquire permits
- Build
- Finance a portion of project costs
- Operate
- Maintain including repairs and relocations
- Commercialize – Generate revenue & savings for PTC

KEY ASPECTS OF THE PARTNERSHIP

The Commission will:

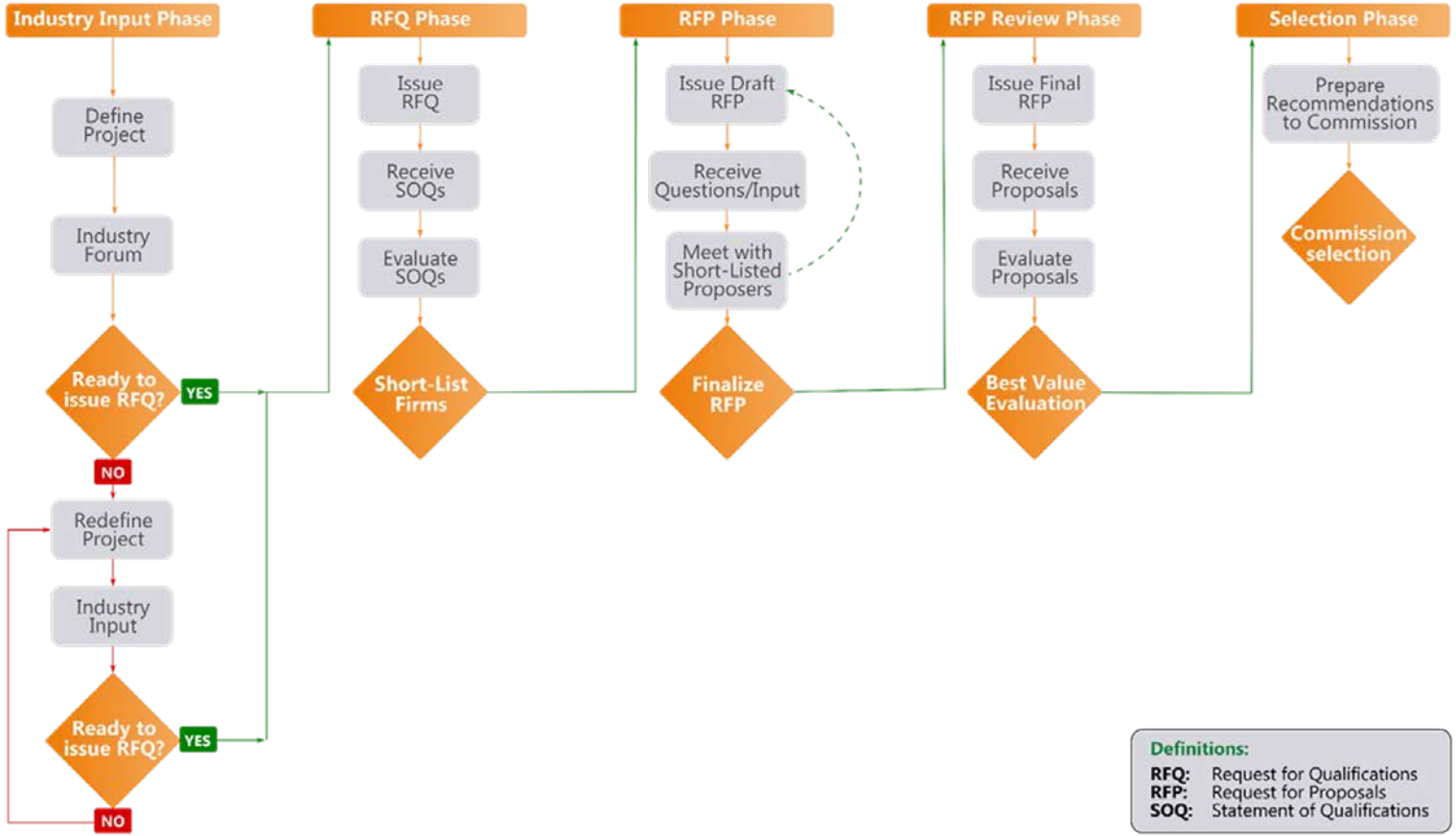
- Compensate the Development Entity – Milestone & Availability Payments
- Use Commission's fiber optic network for noncommercial purposes
- Share fiber with transportation and public safety entities.
- Deploy cashless tolling, ITS, CA/V
- Reduce microwave data transmissions and associated O&M

PROCESS

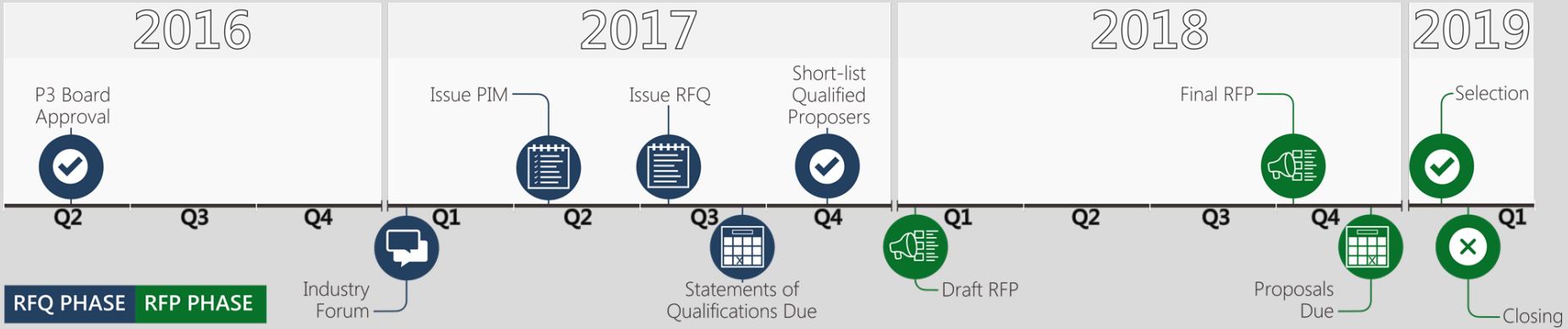
- Industry Forum
- Preliminary Informational Memo
- RFQ
- RFP

Pennsylvania Turnpike Commission

Broadband Public-Private Partnership (P3) Procurement Process

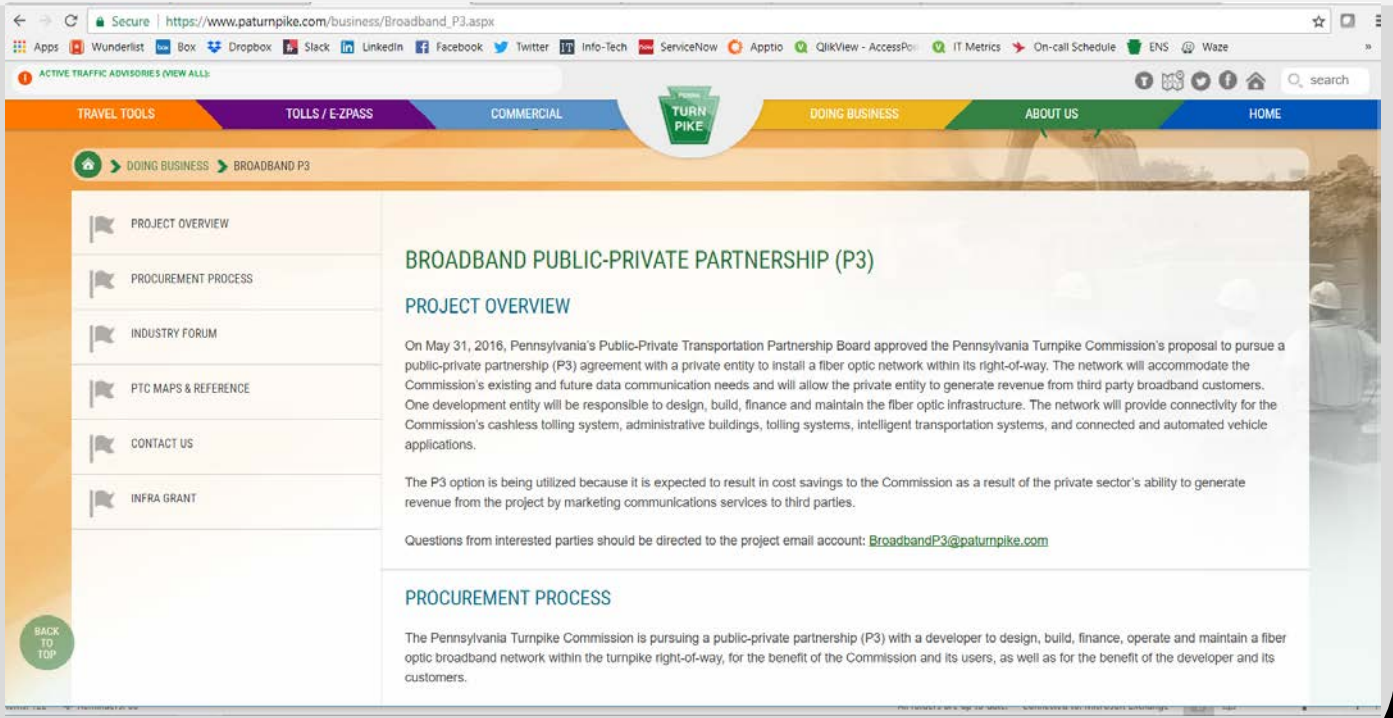


SCHEDULE


2016
2017
2018
2019
P3 Board Approval
Issue PIM
Issue RFQ
Short-list Qualified Proposers
Final RFP
Selection
Q2
Q3
Q4
Q1
Q2
Q3
Q4
Q1
Q2
Q3
Q4
Q1
Industry Forum
Statements of Qualifications Due
Draft RFP
Proposals Due
Closing
RFQ PHASE
RFP PHASE

INDUSTRY RESPONSE

- Six teams responded to the RFQ
- Four teams shortlisted



Risk Allocation

RISK ALLOCATION

Key Risks:

- Design
- Environmental Permitting
- Construction; large scale project
- Revenue risk
- Impact on Commission projects
- Impact on maintenance activities
- Existing conduit
- Compensation events
- Schedule
- Cost
- Protection of fiber
- Utilities/ Railroads
- Technological obsolescence
- Change in law

Future-Proofing the Project

FUTURE-PROOFING

- Fiber
  - Number of Fibers
  - Versatility
  - Not likely to be obsolete
  - Lifecycle
- Accessibility to fiber & conduit
- Opportunities for future use
  - ITS/ Improved Incident Response
  - CAV Deployment
  - Provisions in contract for future connections

Lessons Learned

WHAT CHANGED?

- Scope changed: fiber/wireless to dark fiber
- Milestone and availability payments
- Network redundancy
- Procurement schedule
- Alternative Technical Concepts

LESSONS LEARNED

- “Pathfinding Project”
- Federal funding & NEPA implications
- Scope refinements
- Schedule: P3 v. other procurement methods
- Existing conduit conditions
- Alignment with market demand and market timing
- Proposer interaction
- Innovations

THANK YOU!

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