City of Chula Vista, CA

Telecommunications Master Plan

Presented By:

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Agenda

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- ▶ Supporting Smart City Goals and Applications
- ▶ Leveraging Existing Assets
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- ▶ Policy & Governance
- ▶ Partnership Opportunities
- ▶ Questions

Introductions

Jory Wolf
Project Executive
VP of Digital Innovation

- Over 35 Years of Public Sector IT Experience
- 22 Years as CIO at the City of Santa Monica
- Launched Santa Monica Wi-Fi, providing free internet services to the public
- Innovated Santa Monica City Net, one of the first municipal fiber networks in the US

Joe Carella, PMP
Project Manager
Senior Broadband Consultant

- Over 25 years' Experience in Technology Management and Consulting in the Technology Space
- 7 years in Fiber Construction, Broadband Management, Digital Inclusion and Smart Cities Planning
- Over $75 million in Federal Grants

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About Magellan Advisors

Magellan provides leading wireless, broadband, Smart City, turnkey design and engineering, and project and construction management to public and private organizations. We are a full spectrum planning and implementation firm that brings together technology, communications and utility consulting to create smart gigabit cities of tomorrow.

Our professionals bring years of experience from the broadband, telecom, information technology and government sectors. We are thought leaders and real-world implementers of broadband and smart city networks that keep communities competitive in the digital world.

400	50	1M	$1B
Munis, Utilities & Co-Ops	Community Networks Built	Homes with Fiber Broadband	In New Broadband Investments

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Telecommunications Master Plan

- Core Infrastructure and LAN/MAN Opportunities
- Data Center
- Telephony
- Video
- Signage & Kiosks
- Sensor Networks
- Wi-Fi and Municipal Wireless Systems
- Operations & Maintenance Costs
- Long Term Costs
- Current Environment (Suitability for Smart Cities)
- Data Policies
- Wireless Systems Security
- Governance
- Valuation of City Assets

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Telecommunications Master Plan

Support for Smart City Goals

▶ Connect all City facilities, providing a secure, cost effective, redundant and flexible network infrastructure to meet current and future data, video and voice communications needs.

▶ Provide a network infrastructure to enable the City to control its telecommunications costs, implement smart city initiatives and encourage economic development.

▶ Provide a network infrastructure which enables applications and services, and facilitates innovation and economic development within the City, including the Bayfront, Millenia, and University & Innovation areas.

▶ Provide timely, accurate data to centralized locations from myriad sources including IoT devices, mobile field units (for Police, Fire, Public Works) and other infrastructure to maximize efficiency and enable timely, accurate business management decisions.

▶ Connect citizens to City services and provide access to data which will allow citizens to be more connected to their government. Further, the City envisions significantly reducing the "digital divide" by providing access to the internet and City digital services to underserved areas.

▶ Where practical, develop Public - Private partnerships to further the Smart Cities vision.

Supporting Smart Cities Applications

GREEN CITY
Green Infrastructure
Smart Energy and Utilities
Transport efficiency

ENERGY & UTILITIES
Power Generation Optimization
Grid Protection and Control
Intelligent Utility Network

E-GOVERNANCE
Online Records
Complaint Management
Payment Gateways

TRANSPORT
Urban Mobility Solutions
Airport / Railway Management
Fleet Optimization

PUBLIC SAFETY
Law Enforcement
Emergency Management
Security and Surveillance

EDUCATION
Analytics and research
School Solutions
Video conferencing

SMART BUILDING
Energy Optimization
Appliance Integration and control
Smart Metering

HEALTHCARE
Remote Monitoring
Asset Management
Telemedicine

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Supporting Smart Cities Applications

SMART CITY USE CASES

SMART PARKING — WEATHER SENSORS — DIGITAL SIGNAGE — ACOUSTIC SENSORS — WATER & GAS METERING — TRAFFIC LIGHTS & CONTROLS — ELECTRIC VEHICLE CHARGING — SOLAR INVERTERS — SECURITY AND SURVEILLANCE — WASTE MANAGEMENT

Telecommunications Master Plan

Current Environment (Suitability for Smart Cities)

The four identified necessities are:

- **Citywide fiber network –** Must be robust enough to provide backhaul for 5G and other smart devices strategically placed throughout the City. The fiber network may be newly constructed or leased from commercial providers or other partners.

- **Policies to support data and usage –** With large amounts of data being captured and published to support Smart City initiatives, the policies required for governing data, use and protection of data must be defined and approved.

- **Appropriate pricing –** City has many valuable assets, including streetlights and other vertical assets. Consistent, legitimate and valid pricing must be developed to support timely responses to licensing applications, and to monetize City assets where possible.

- **Necessary additional staffing –** ITS staffing today is insufficient to support its backlog of projects. Significant, or even several, Smart City initiatives cannot be reliably or timely supported with current staffing and budget. Staffing augmentation contracts and contractors may provide specific technical skills but will require additional funding.

Why Fiber?

Physical Bandwidth Capacity Comparisons

Dial-Up – 56Kbps
- *Legacy Technology*
- *Shared Technology*

ADSL – 10Mbps
- *First Generation of DSL*
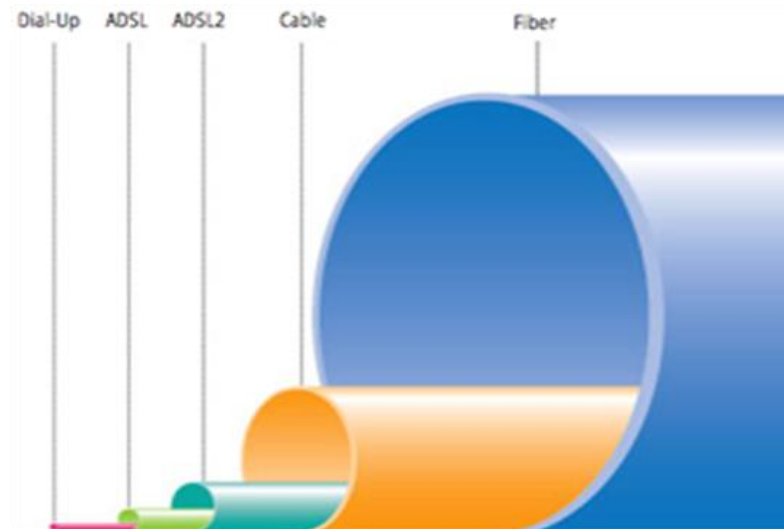- *Shared Technology*

ADSL2 – 24Mbps
- *Second Generation DSL*
- *Shared Technology*

Cable – 150Mbps
- *Data Over Cable (DOCSIS 3.0)*
- *Shared Technology*

Next Generation Fiber – 1Gbps
- *Passive Optical, Active Ethernet*
- *Shared and Dedicated Technology*

▶ High capacity

▶ Low latency

▶ Handles large amounts of data at nearly the speed of light

▶ Supports Smart City applications

▶ Lifespan of 30+ years

Leveraging Existing Assets

- ▶ **Traffic Management System**
    - ▶ Fiber-optic cable
    - ▶ Conduit
- ▶ **Vertical Assets:**
    - ▶ Utility, streetlight, & traffic signal poles
    - ▶ Towers, antenna, hilltops, rooftops, parks & open space
- ▶ **Rights-of-Way and Easements**
- ▶ **City Resources & Organizational Structure**
- ▶ **Service Provider Assets & Potential for Partnerships**

Deploying New Assets

- Incremental
    - 6 Phases
    - Based on demand, connecting the most critical and high-traffic locations first
- Opportunistic
    - Coordinates with Traffic Signal Communications Master Plan
    - Phases can be completed as funding becomes available
- Opens possibilities for strategic partnerships

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Deploying New Assets

Required

Phase 1	Phase 2	Phase 3
• Backbone Ring 1 • Connecting Data Centers • Connecting Aggregation Sites	• Traffic Network Connecting to Ring 1	• Laterals Connecting 16 City Sites to Ring 1

Contingent

Phase 4	Phase 5	Phase 5
• Backbone Ring 2 • Laterals to 7 City Sites	• Traffic network Connecting to Ring 2	• Backbone Ring 3 • Remaining Traffic Network

Deploying New Assets

Deploying New Assets

Phase 4
Phase 5

Deploying New Assets

Deploying New Assets

Phasing Summary - City of Chula Vista Conceptual Network					
	Laterals			**Backbone**	
Phase	Sites Connected	Lateral Footage	Engineering, Labor, and Materials Cost	Backbone Footage	Engineering, Labor, and Materials Cost
1	4	2,539	$163,933	73,371	$3,881,683
2	0	112,855	$5,171,943	N/A	N/A
3	16	35,953	$1,797,155	N/A	N/A
4	7	31,332	$1,516,356	70,343	$3,713,526
5	0	81,280	$3,938,972	N/A	N/A
6	0	17,971	$876,644	32,953	$1,771,295
Totals	**27**	**281,930**	**$13,465,002**	**176,667**	**$9,366,504**

Ring	Phase(s)	Sites	Labor & Material	10% Contingency	Design and Engineering	Total Const, Des & Eng	Const Mgt	Project Mgt	Equipment *	Total
1 (Hi Pri)	1,2,3	20	10,733,816	1,073,382	238,073	12,045,270	270,000	225,000	283,010	**12,823,280**
2 (Cont)	4,5	7	8,940,160	894,016	228,248	10,062,424	270,000	225,000	87,080	**10,644,504**
3 (Cont)	6	0	2,584,284	258,428	106,925	2,949,638	216,000	180,000	65,310	**3,410,948**
		Totals:	**22,258,260**	**2,225,826**	**573,246**	**25,057,332**	**756,000**	**630,000**	**435,400**	**26,878,732**

Policy & Governance

- Data Privacy Policy

- Open Data Policy

- Data Ownership Policy

- Smart Cities Readiness Policy

- Dig Once / Joint Trench Policy

- Development Review

- Development Agreements

- Capital Projects

- Expansion of IT Oversight Program

  - Establishment of a Project Management Office (PMO)

- SWOT- ITS, City

Partnership Opportunities

▶ Opportunities to partner with third-party internet service providers and infrastructure owner/operators

▶ Partnership evaluation:

　▶ New investment and infrastructure

　▶ Cost savings for city operations

　▶ Benefit to the community

　▶ Construction methods and timelines

　▶ Revenue sharing and in-kind considerations

　▶ Non-exclusivity

Questions?