INTEGRATED SMART CITY PLANNING FOR CHULA VISTA BAYFRONT REDEVELOPMENT

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Jennifer James
Director of Smart City Solutions
JamesJA@bv.com
@BVSII @nexusjen

CITY OF CHULA VISTA SMART REDEVELOPMENT

- 530+ acre waterfront re-development to include convention center, resort/hotel, condominium, residential, and marina retail
  - Joint effort between City of Chula Vista and Port of San Diego

- Evaluate energy technologies that will help meet terms of Settlement Agreement (50% reduction in energy use and options for net zero)

- Evaluate options for communications networks and smart infrastructure solutions before horizontal infrastructure is built

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PLANNING AREAS AND APPROACH

Domain	Focus Areas	Approach
Energy	Renewable energy, distributed generation/microgrid, energy efficiency options	Energy technology matrix and weighting criteria, financial analysis of top ranked options
Telecom	Wired and wireless network options to meet needs of all applications (energy and smart city)	Fiber/conduit vs. public carrier 3G/4G/LPWAN vs. private WiFi / LPWAN – technical, financial, and operational aspects of each
Smart City Technology	Smart city solutions and applications (lighting, waste, kiosks, transportation, etc.) and supporting data and analytics infrastructure	Decision framework to prioritize applications, technical HW and SW implications, ROI and budgetary analysis to support decision making process

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OPPORTUNITY INVESTIGATION – ENERGY

1. Identified technology options – Largest building types and their largest loads, and relevant technologies

2. **Applied non-economic criteria –** Technical, social, and environmental, appropriate for the Bayfront

3. Estimated cost-effectiveness – as measured by simple payback. Also considered levelized cost of energy (LCOE) and levelized net present value (NPV) per unit of energy.

4. **Considered the non-economic and economic factors simultaneously –** to determine best-suited technologies for each building type

5. **Identified key considerations and high-level costs** of a microgrid, and other future energy assets at the Bayfront.

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COMMUNICATIONS ARCHITECTURE CRITERIA

NETWORK INFRASTRUCTURE REQUIREMENTS	DESCRIPTION
Scalability	Does the network architecture provide the desired wired or wireless coverage for the different applications? Does the design allow capacity expansion in the future as data requirements change?
Performance	Does the infrastructure provide methods to prioritize traffic or have the ability to assign service qualities to different traffic types (video versus sensor, etc.)? How does the architecture handle different traffic patterns (broadcast/multicast, etc.)?
Interoperability	Does the network technology adhere to open standards, or is it based on a proprietary standard?
Multipurpose	Does the solution allow for multiple services to use the same physical infrastructure? Does the network technology allow multiple types of devices to use the same transport medium (video cameras, sensors, supervisory control and data acquisition [SCADA], public Wi-Fi)?
Reliability	Is the network architecture designed for high availability? What is the impact of a network node or network link failure?
Security	Does the network architecture provide a secure transport of data between network links or paths? Does it have the ability to secure both network traffic and network devices?
OA&M	These costs cover how the organization will need to adapt to support the proposed network solution.

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SMART CITY TECHNOLOGIES EVALUATION MATRIX

APPLICATION AREA	OPERATIONAL SAVINGS	NEW REVENUE	ECONOMIC DEVELOPMENT	SUSTAINABILITY	SAFETY AND SECURITY	CITIZEN ENGAGEMENT	DISADVANTAGED COMMUNITY	TOTAL
LED Lighting								
Kiosks								
Parking								
Transportation								
Public Transportation								
ZEV								
Waste								
Energy Management								
Public Wi-Fi								
Structural Health								
Water/Agriculture								
Environmental								
Public Safety								
Asset Monitoring								

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JamesJA@bv.com
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