128 Corporate Alliance
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ISSUE BRIEF

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Essential Services

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Background-

The Alliance members have identified the need for reliable municipal and utility services as a priority workplace concern within the 128 central corridor. This corridor is generally considered to cover the commercial activity along Route 128/ Interstate 95 from Route 3 in Burlington south to the Massachusetts Turnpike. Their concerns include the consistent delivery of essential utility services like water, sewer, electricity, and gas. In particular, adequate water quality and pressure as well as power interruptions are a critical concern for their current workforce and in planning for member companies' long- term growth needs along the 128 central corridor. Alliance members are committed to working with neighboring communities, local developers, and state officials in an effort to insure that essential services will keep pace with the increasing demands created by growth in local markets.

Municipal services must keep pace with the demands of additional development and occupancy. Examples of issues concerning the adequacy of essential utility services can be found along the corridor in Waltham. Developed sites along Bear Hill Road have reported difficulty in maintaining adequate water pressure to meet emergency minimum standards as well as supplying daily water needs. The water is also discolored due to limited flow within old iron pipes. In this instance the City of Waltham maintains the water lines in the town and has plans to make upgrades to the supply system, but it is not clear when these improvements will be made.

Power outages are a regular and frequent business interruption that causes havoc for workplaces along the 128 corridor. The area on the west side of Winter Street has been subject to numerous power outages in recent years. For example one company on West Street has reported 6 power outages, of a duration of 25 minutes or more over the past 20 months. ImmmunoGen Inc., a biotech company, has reported 11 power outages since moving to 830 Winter Street in March 2008. While these outages have varied in duration, even a momentary power lapse (2 seconds) can result in a costly interruption of critical experiments. Such outages are often the result of the slow response times of mechanical switches. Power interruptions are extremely costly to companies. Sun Microsystems estimates that a black out can cost the company $1 million per minute.[1]

These examples represent critical concerns for the workplaces of members of the 128 Corporate Alliance. Member companies include: Fresenius Medical Care, National Grid, ImmunoGen, Massachusetts Medical Society, Adobe Systems Inc, Perkin Elmer Inc, Qinetiq/Foster Miller, and The Westin Waltham. These companies employ a workforce of over 4,000 along the 128 Central Corridor. With some essential services compromised by this rapid growth, member companies are looking to identify specific capital improvement programs planned by local municipalities and utility companies.

Municipal Services- Most neighboring communities located along the 128 corridor are responsible for critical municipal services including sewer, water, local road improvements and police and fire services. Many of the communities rely on a town meeting form of government where an elected Board of Selectmen govern the affairs of the community. The day-to-day administration of these Towns is typically centralized under a full-time professional Town Manager appointed by the Selectmen. Municipal department and division heads then in turn report to the Town Manager. The exception would be the City of Waltham which elects a Mayor and a 15 member City Council. In Waltham, the water and sewer services fall under the auspices of the Engineering Department.

Electric Power Equipment- Power utilities must constantly upgrade their equipment to meet increased demands on their services. These upgrades can be very costly and in some cases limited by local controls. NSTAR, the principal electric utility serving the 128 Corridor has relied on switch upgrades, transformer and cable replacements, and preventative maintenance to address the challenges presented by frequent power interruptions. NSTAR serves over 150,000 commercial customers and nearly 1 million residential customers. NSTAR Electric maintains and upgrades three principal property types- substations, transmission and distribution lines, and meters[2]- all necessary to maintain reliable service to customers. NSTAR's high-voltage transmission lines are generally located on owned land or subject to easements. The company maintains easements for most of its distribution lines. In most cases cables, wires or equipment fail because they are too old, they lack proper maintenance, or are subject to an electric load in excess of their capacity. Most commercial customers assume that NSTAR will increase their capacity as needed to avert any equipment failures. Given the recent issues encountered along Winter Street and other "hot zones" along the Corridor, a critical question remains: Does NSTAR conduct sufficient preventive maintenance and equipment upgrades to prevent power outages in our area?

State Regulation- At the State level, the Department of Public Utilities is responsible for regulatory oversight of all investor-owned electric power, natural gas, and water industries in the Commonwealth. The mission of the DPU is "to ensure that utility consumers are provided with the most reliable service at the lowest possible cost; to protect the public safety from transportation and gas pipeline related accidents; to oversee the energy facilities siting process; and to ensure that residential ratepayers' rights are protected."

The DPU as well as the Federal Energy Regulatory Commission, or FERC, regulates NSTAR's electric operations, and the rates they charge. Furthermore, equipment failures that result in substandard performance could cause NSTAR to incur penalties imposed by the DPU, up to a maximum of two and one-half percent of transmission and distribution revenues under applicable Service Quality Indicators (SQI).[3]

On July 2, 2008, the Massachusetts Legislature passed the *Green Communities Act* (GCA), energy policy legislation, designed to substantially increase energy efficiency and the development of renewable energy. This legislation has increased pressures on utilities to invest in energy alternatives, and it is not clear how this will impact investment decisions within utility firms. While all member companies of the Alliance support the development of renewable energy alternatives, they also seek assurances

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that NSTAR is developing and maintaining a "state of the art" smart grid to meet customer needs.

Options-

Municipal Impact Fees- A number of communities have required developers to contribute to infrastructure costs for road improvements, emergency services and in some cases indirect impacts like education needs. For example, the City of Waltham has created an impact fee for new development projects know as "infiltration and inflow" or "I and I" whereby new projects are assessed a fee based upon the amount of estimated sewerage effluent. These funds are applied to the replacement of decaying sewer lines in targeted locations. Unfortunately, these resources are often not applied to development impacts that are the result of the new growth and project demands.

Electrical System Upgrades- NSTAR must evaluate upgrades to its three principal property types—substations, transmission and distribution lines, and meters. Recent examples of upgrades along the corridor include:

Substation switchgear upgrades eliminate the need for remote re-closer/circuit breaker mechanisms.

Remote switching capability that allows for remote monitoring and switching through the use of NSTAR's SCADA (Supervisory Control and Data Acquisition) system. This eliminates the need to perform manual switching service in the field.

Contingency switching links multiple circuits through a "tie switch" that allows a back-up circuit to perform key functions when a fault is encountered in the primary circuit.

Electrical System Maintenance- NSTAR performs routine maintenance to its property to insure reliability. Examples include:

Reconductoring involves replacing existing conductors (distribution lines) with higher capacity conductors.

Tree trimming is required to maintain tree branches that overhang wires and cause outages after heavy winds and snowstorms. Many cities and towns have ordinances that protect tree removals on scenic roadways. It is challenging for utility companies to "strike a balance between aesthetics and safety" but state law governs the need to keep the lines clear.[4]

Position of the 128 Corporate Alliance-

Short-Term Outcomes

1. Conduct a comparative systems analysis of other equal demand areas. These include parts of Waltham, Burlington and Lexington. Confirm that there is adequate equipment to satisfy the demand.
2. Analyze Utility strategic plans for electric utility capital replacements and upgrades.

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3. Encourage utility companies to remove impediments to overhead lines within their utility ease ment by promoting vigorous planning and coordination with local tree wardens.
4. Ensure that SCADA adaptations are promptly tested, debugged, and transitioned into immediate use.
5. Review municipal capital plans to identify water and sewer capital projects and projected time lines for implementation.

Longer-Term Outcomes

1. Improve the reliability of the current loop feed design by installing secondary or tertiary lines that draw from alternative transfer stations .
2. Make the 128 corridor a “test bed” for state-of-the-art smart grid enhancements. The technology firms that call this area home are developing an equal commitment for provision of the same mission critical essential services.
3. Target the corridor for advancements including implementation of phaser measurement units, the next generation technology to SCADA technology.
4. Target key municipal infrastructure projects for funding.

The 128 Corporate Alliance firmly supports the overarching goal that “quality of workplace” is of paramount concern to member firms and their employees. For this reason, we firmly support the need for state and local governments, and the development community, to work with employers located along the corridor to improve the transportation challenges along Route 128.

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Endnotes-

1. The Smart Grid: An Introduction prepared for The U.S. Department of Energy by Litos Strategic Communication under contract No. DE-AC 26-04NT 41817, Subtask 560.01.04

2. According to their annual report at December 31, 2008, NSTAR Electric reported that it's "primary and secondary transmission and distribution system consisted of approximately 21,950 circuit miles of overhead lines, approximately 12,980 circuit miles of underground lines, 255 substation facilities and approximately 1,169,300 active customer meters."

3. According to the NSTAR annual report Service Quality Indicators (SQI) are "established performance benchmarks for certain identified measures of service quality relating to customer service and billing performance, safety and reliability and consumer division statistics performance for all Massachusetts utilities. NSTAR Electric and NSTAR Gas are required to report annually to the DPU concerning their performance as to each measure and are subject to maximum penalties of up to two percent (two and one-half percent beginning in 2009) of total transmission and distribution revenues should performance fail to meet the applicable benchmarks. Annually, each NSTAR utility subsidiary makes a service quality performance filing with the DPU".

On March 1, 2007, NSTAR Electric and NSTAR Gas filed their 2006 Service Quality Reports with the DPU that demonstrated the Companies achieved sufficient levels of performance. The reports indicate that no penalty was assessable for 2006. The DPU approved both filings but did not approve NSTAR Electric's benchmarks due to outstanding DPU decisions relating to changes in the calculation of reliability measures for the duration and frequency of service interruptions. On September 25, 2008, the DPU issued an order clarifying these requirements, and NSTAR Electric will file recalculated benchmarks in 2009. In addition, the May and September 2008 DPU orders established new requirements for NSTAR Electric performance metrics related to **poor performing circuits**. These new performance metrics measure circuit performance over a three-year period that commenced on January 1, 2007. NSTAR Electric's performance level has not been in a penalty position as of December 31, 2008. NSTAR Electric will not be able to determine its final performance related to all of the SQI circuit performance measurements until the end of 2009.

4. Sell, Adam J.V.; "Residents take aim at NSTAR tree trims", Boston Globe, October 18, 2009

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