City of Cambridge

Richard C. Rossi • City Manager

Executive Department

Lisa C. Peterson • Deputy City Manager

September 26, 2016

To the Honorable, the City Council:

I am pleased to submit the Broadband Task Force recommendations and Tilson Report.

Very truly yours,

Richard C. Rossi
City Manager

RCR/mec
Attachment(s)

To: Richard C. Rossi, City Manager, City of Cambridge
From: The Cambridge Broadband Task Force
Date: August 3, 2016
Subject: Phase 1 Conclusion and Recommendations

In October 2014, you appointed us to the Cambridge Broadband Task Force to examine "options to increase competition, reduce pricing, and improve speed, reliability, and customer service for both residents and businesses" for broadband service in Cambridge. Since then, we've met with City staff and expert consultants hired by the City, reviewed case studies of other broadband efforts, conducted two public outreach meetings, and conducted a survey of resident opinions. Some of us have attended industry conferences and local events regarding broadband. We've discussed a wide range of options, various public/private partnerships, business models, and alternatives to a city-wide fiber optic broadband network.
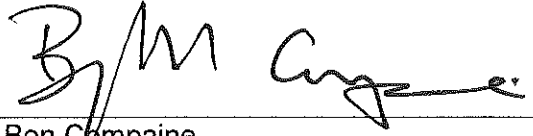
As this phase of study comes to a close, some members have concluded that the best way forward is through a City-owned municipal broadband system, believing it to be the only way the City can be sure of meeting its objectives. Others believe that there are a range of other solutions that could result in achieving a similar end but with less cost and risk to the City. There are two items, however, about which we are unanimous:
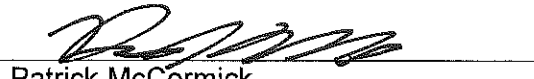
- We disagree with the recommendation of the consultant, Tilson, to build a dark fiber network as a way to provide incentives for some corporate entity to finish it. In addition, the option that provides fiber solely to Cambridge Housing Authority (CHA) locations is not accepted by the Task Force.
- Because the scope of the Tilson study was so broad, it wasn't as detailed as it might otherwise have been. If the City is to contemplate a capital expenditure of as much as $187,000,000, (Tilson's rough cost estimate for a city-wide broadband system), it needs more details and assurances than this process has been able to provide.

We recommend that the City proceed to a next phase of planning, a Municipal Broadband Feasibility Study. We intend this phase to be highly focused, broadly inclusive to incorporate better community outreach, and to produce the best possible plan for municipal broadband in Cambridge. This plan should then be rigorously tested against economic realities. In this framework, we would expect to provide you with an appropriately useful analysis of the costs, benefits, and risks of a municipal broadband system so as to allow you to make a fully informed decision.

Attached are our conclusions and recommendations, as well as the report from Tilson. We wish to thank you for appointing a Broadband Task Force to examine this important community issue and we look forward to Phase II of this process.
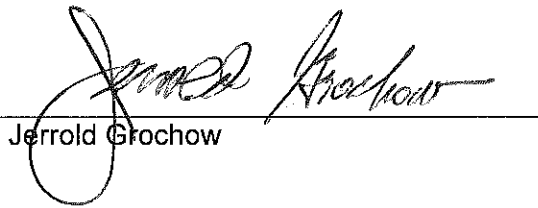
Submitted to the City Manager by the Cambridge Broadband Task Force

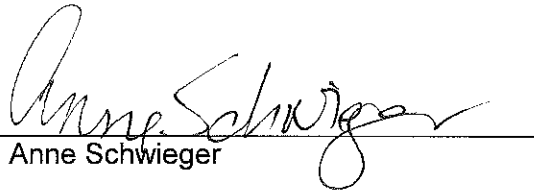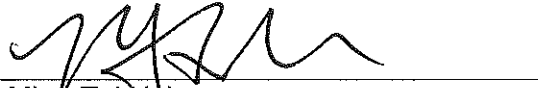_____
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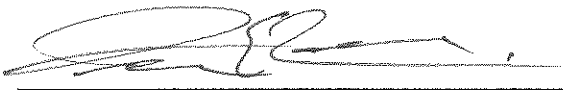
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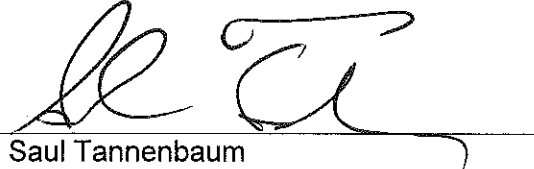
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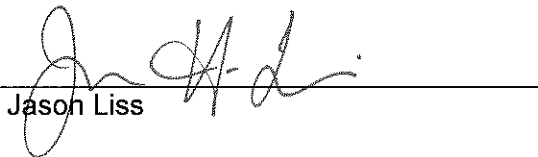
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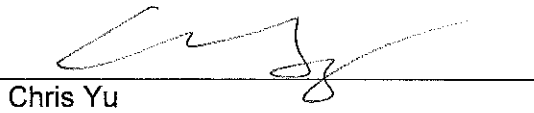
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PHASE 1 CONCLUSIONS AND RECOMMENDATIONS OF THE BROADBAND TASK FORCE

Highlights Learned in Phase I

Through Tilson's research, a randomized telephone survey, two community outreach sessions, attendance at conferences, and the discussion of the Task Force, we have learned:

- About two-thirds of households surveyed felt that their Internet service was of average or better value.
- Based on the survey, only 5% of City residents are frequent users of public Wi-Fi. Another 16% use it "occasionally."
- More residents considered "reliability" of greater importance than the cost or the speed of the service.
- Slightly more than half the respondents would be very or somewhat willing to pay more for faster service.
- According to participants in our outreach efforts, business and institutional users in Cambridge generally have the service they need directly from third party vendors. There is no evidence that data service issues are causing them to either leave Cambridge or not locate in Cambridge.
- Dozens of municipalities have implemented their own broadband service, often including cable TV. Hundreds of municipalities have government-owned networks of some kind, with many permutations of ownership and control. They range from totally municipally-owned and operated systems to municipal ownership of the underlying fiber backbone with private ownership and control of actual premises connections and the provision of services.
- Motivation for municipally-financed systems include the need to wire areas that private providers have neglected, to create better services in order to attract business to the area, and to offer services at lower prices than existing providers.
- In the overwhelming number of cases where local government has been successful in creating a municipally-owned broadband entity, the municipality had already owned the electric utility, providing ready access to conduits as well as operating experience and efficiencies in financing, billing, and account management for the add-on broadband service.

Goals and Objectives

Affordability and Equity

In 2015, the Mayor's Blue Ribbon Commission on Income Insecurity in Cambridge reported that the cost of internet was a major concern of residents who participated in its focus groups. Phase II of planning must directly address digital equity and inclusiveness, seeking the advice of residents who have not adopted broadband in the home or who have, but find the expense burdensome. The next phase should also incorporate targeted outreach to, for example, low income communities, the school system, and Cambridge social service agencies. Cambridge, with its wealth of resources, can provide a model for how cities should deal with digital inclusiveness.

Therefore, based on Phase I findings, a few questions arise:

- How much would a municipal broadband build-out improve access to affordable broadband for residents and small businesses (with the term "affordable rates" defined for 100Mbs and 1Gbs service)?
- How much would a municipal broadband build-out provide a better service at lower cost to all residents than the current levels of commercial service?
- How much would a municipal broadband build-out ensure that access programs solve real problems experienced by low income households?

Choice & Competition

Based on Phase I findings on the number of broadband providers in Cambridge:

- What is the likely impact on broadband pricing for business and residential customers with municipal broadband as the new competitor?
- What is the likelihood, and under what circumstance, might a private competitor enter the Cambridge market? Would that undermine, obviate, or reinforce the need for a municipally-financed system?

Supporting Entrepreneurs & Small Businesses

Based on Phase I findings on broadband availability and pricing in Cambridge:

- What would be the level of improvement to access to >100Mbs broadband for entrepreneurs and small businesses?
- What new opportunities might be afforded to entrepreneurs and small business by improved access to >100Mbs broadband?
- How can enterprise quality broadband be assured to be available throughout Cambridge?

Innovation & Excellence

The Task Force recommends that Phase II include broad outreach to the commercial, entrepreneurial, and institutional sectors of the Cambridge community. Institutions like Harvard and MIT have internal high speed networks and seek the highest speed connections for their worldwide research collaborations. We have a burgeoning biomedical industry that needs to move vast amounts of data for its business purposes. We also have a legion of entrepreneurs eager to find digital business opportunities.

As Cambridge aims to be a global leader in health care, services for the elderly, smart cities applications, and city efficiency, high quality broadband is critical. Further investigation of these areas will be required in Phase II.

How a robust municipal broadband infrastructure could help spur innovation and access to opportunity across Cambridge, as described in Tilson's Appendix G: Outreach Session #1 Issues and Recommendations needs to be explored.

Local Control

Based on the experience of communities currently running municipal broadband networks
- What have been the observed benefits of local control?
- What is the range of local control that might be realized under various business models, as all the way from city-owned and operated to city-financed but leased out to operators?

Considerations for a Municipal Broadband Network in Cambridge

Among the key potential benefits of a Cambridge-owned network would be, first, control over pricing and services and, second, the flexibility to make decisions based on social need rather than business needs.

Those of us who support municipal broadband take note of the City's previous efforts to solve these problems. The City has applied for Google Fiber and invited telecommunications companies to build a network in Cambridge. We believe, as do many experts, that the nation is experiencing a widespread market failure in the telecommunications industry. We agree with President Barack Obama[1] who has called high speed municipal networks "good for business, communities, schools, even the marketplace because they promote efficiency and competition." We also agree with Federal Communication Commission Chair Tom Wheeler who said, "When commercial providers don't step up to serve a community's needs, we should embrace the great American tradition of citizens stepping up to take action collectively."[2]

The Tilson report documents some of the successful municipal broadband projects. Tilson has provided a rough cost estimate for building a full broadband network in Cambridge, placing it in the cost range of a new school, an investment in the community that the City makes routinely, albeit carefully. Building a fiber optic broadband network is a complex but well understood skill. If Cambridge were to undertake such a project, it would be selecting from among the same consultants and contractors as would the private sector. Cambridge's advantages are two. Because of its outstanding AAA credit rating, it has access to less expensive financing. And, when the build was over, Cambridge would own a network as an asset and be able to chart its own destiny.

Although a city-funded broadband network has attractive attributes, the evidence suggests that it could be a high cost endeavor with substantial financial risks.

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[1] https://www.whitehouse.gov/the-press-office/2015/01/14/remarks-president-promoting-community-broadband
[2] https://apps.fcc.gov/edocs_public/attachmatch/DOC-332988A1.pdf

The Tilson study included a telephone-based scientific survey of Cambridge households. Tilson's survey and surveys from the Census Bureau confirm that Cambridge has a considerably higher rate of household broadband connections than the national average.

The Tilson report included a number of case studies of other municipalities that have built cable or broadband-only networks. Few, if any, are directly comparable to Cambridge. There are precious few cases of build-outs that are financially viable without ongoing subsidies. Many were built on top of existing municipally-owned electric utilities, which provide some economies of scale and scope. In most cases the motivation for municipal ownership was to wire homes and businesses that the private carrier had not, which does not apply in Cambridge. A common motivation found in the case studies was to create an infrastructure that would attract and retain businesses and institutions and,thereby, employment.

Future technologies, such as 5G wireless, must be incorporated into the assumptions for municipal broadband. Any broadband system built today would be with fiber as both a backbone and to the premises, promising far greater bandwidth than current services.

Municipal Broadband Feasibility Study: Questions that require answers

Decision makers will need to know how a full municipal broadband build-out might enable the City of Cambridge to meet its goals for broadband, as laid out in Phase I. Phase II should seek to provide this information by answering the following questions:

- Building the network
  - What will be the full cost of building a full municipal network? Are there neighborhood-by-neighborhood variations in the cost profile considered in Tilson's report?
  - Can the construction of a network be phased so that each phase of work has its own value to Cambridge?
  - What's the best plan for funding a network build-out given Cambridge's general practices for capital expenditure?

- Operating the network
  - What's an appropriate legal structure for Cambridge to build and operate a broadband network?
  - How many Cambridge households and small businesses will sign up as customers? Will that projected "take rate" cover both operating and construction costs?
  - Is Cambridge willing to offer cable television and voice service bundles in order to acquire a significant number of customers? If so, what additional cost and complexity will that add the effort? Are there additional reasons/benefits for doing so?

- Should Cambridge seek full cost recovery from a network "business" or is it prepared to use tax revenues to cover some of the costs? If so, how much of the costs?
- How would the incumbent players, particularly Comcast, respond to a competitive player? This could result in desirable changes such as accelerating system improvement or lowering prices. On the other hand, such results may undercut the economic assumptions underlying the take rate and revenue projections for the municipal system.
- What is the shape of evolving technologies? Any substantial building of plant and equipment at the end of this study will likely be coming on stream no sooner than widespread implementation of 5G is expected.
- Can a stand-alone data-only service reasonably compete with existing services that bundle video and data services together over a plant that has similar costs?
- How large a role does "profit" play in the prices households now pay for data and video services?
- Short of building physical plant, are there other programs that could achieve the goal of providing quality broadband to the relatively small number of households that have economic need?

Municipal Broadband Feasibility Study: Expected Results

It is the intent of the Task Force that Phase II provide sufficient quantitative and other information for the City Manager to make a decision about whether and how to pursue a municipal broadband network. We believe the following information is required in order to accomplish this goal:

1. Street-by-street and neighborhood-by-neighborhood cost analysis to build the fiber network.
2. The "cost to connect" to the fiber network for a particular premises.
3. Take rate assumption requirements (revenue streams) to support the build-out. How many households would subscribe to the service? For the network to be competitive, would the City also provide telephone and television services?
4. Given the build-out and take rate assumptions, the capital requirements and operational costs to support the fiber network.
5. Development of a flexible implementation plan that considers external factors.

The answers to these questions will allow the City to estimate the amount of coverage/reach of the network and the associate upfront and recurring operating costs.