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To : Kathleen Theoharides, Secretary of Energy and Environmental Affairs,
attention : Alex Strysky, Environmental Analyst, MEPA Unit
Members of the Cambridge Redevelopment Authority
Members of the Cambridge Planning Board

From : Stephen H. Kaiser

Comment on the Notice of Project Change, Kendall Square, EEA #1891

The NPC for Kendall Square MXD District proposes an additional 800,000 s.f. of office development in combination with other sites previously reviewed. The stimulus for these changes has been the addition of an underground electrical transformer station to be built by EverSource in coordination with Boston Properties. The energy objective is to handle increased electrical demand due to development conversions from gas to electric heating and anticipated conversions of vehicles from gas to electric.

BACKGROUND

This notice of project change and rezoning proposal has come from a lengthy and contentious process in Cambridge involving issues of electrical transformer capacity, energy supply, housing, and public safety. The trouble began when the City of Cambridge initiated a "master planning" process spread over several years and costing \$3 million. In preparing its final report, City officials decided it was possible to prepare an Energy Plan for the city, but they decided not to.

Potentials for a local energy crisis were identified by EverSource, a private company yet a "public utility" serving the Cambridge area. Extensive new development was approaching occupancy with insufficient local transformer capacity to service the new loads. The prospect of brownouts or city refusal to grant occupancy permits triggered intense political discussions about the near future. EverSource has demonstrated the

ability to produce an Energy Plan and a forecast for ten years into the future. When EverSource investigated local sites for the new transformers, the parcel selected had been programmed for community housing and was located close to a school. Issues of public safety were raised about a new transformer site close to a school. Community residents and the City Council became engaged in searching for a better site for transformers. The vital question was : could a site be found within the development area at Kendall Square to locate a new transformer station?

It is fair to say that there was no rush of developers offering land to build a new electrical station. One developer, Boston Properties, did seek a solution, involving demolition of a brutalist parking garage, adding 800,000 s.f. of new office space and an underground parking garage, while EverSource would construct an underground transformer station. The disputed parcel originally planned for housing would remain for housing use. Public safety concerns at the school appeared resolved.

The current NPC for the Kendall Square MXD district is a compilation of all these various goals and changes. The Planning Board and Redevelopment Authority are considering zoning changes to allow the 800,000 additional office space, although it is not evident how either Board will deal with energy, traffic and transit issues.

In addition to the NPC and zoning changes, EverSource is actively moving forward with a plan to increase electrical capacity, redundancy, and reliability for surrounding areas of Cambridge, Somerville and Allston. This Eversource project is directly related to distribution of power to and from the Kendall Square transformer site. Both projects are being considered for construction in the same 2024 to 2028 period, with simultaneous completion dates.

ALTERNATIVES

Because of the lengthy negotiations to resolve transformer sites, garage replacement, and an agreement to increase zoning to permit 800,000 s.f. additional room for office development, it would be wise not to introduce considerations of alternatives to the NPC, such as increased housing rather than office space. In effect a package has been agreed upon which appears acceptable, and if major changes were made the agreement could fall

apart and the transformer crisis could start up again. Provisions for emergencies can be considered by MEPA, without provision for a full discussion of alternatives. The current Kendall Square situation is one of those. Therefore it would be wise to continue with the single package plan proposed in the NPC, with no other alternatives.

The primary issues before MEPA relate to adequacy of the present scope for the NPC, scope of the study area, transportation (vehicles, transit, bikes and pedestrians), and energy use. Do these issues warrant further environmental review, such as a Single Environmental Impact Report (SEIR)?

TRAFFIC ISSUES

The bulk of the NPC is 1,000 pages of traffic counts and capacity calculations. Comparisons can be made between

- traffic flows for existing 2021 AM and PM peak hours ...
- traffic generated by approved but not yet occupied new buildings that are “in the pipeline,” and will be in operation during 2028 “No-Build” conditions
- traffic generated by the new 800,000 s.f. Office building in 2028. .

This approach appears to follow sound methodology for estimating future vehicle trips, except for three missing locations described below. From this 2028 No-Build case we can get a sense for what the traffic conditions will be like and how many intersections will or will not be able to take added traffic without creating more congestion. This assessment should also identify key traffic bottleneck conditions that appear incapable of tolerating significant additional traffic without long delays and queues.

The summary of traffic results is displayed concisely at pages C-9 through C-17. Both Volume-to-Capacity ratios (V/C) and delays are presented fully, without cutoffs such as greater-than-1.20 or greater-than-80 seconds. This exemplary approach should become standard practice for Cambridge and MEPA review, except any listing of delays to the nearest tenth of a second is false precision. Unfortunately, in Chapter 2, “Assessment of Project Change Impacts,” no information on Volume/Capacity ratios and delay is summarized. This information should have been included within Table 2-5. The use of

Level of Service ratings are severely limited under congested conditions. Level-of-Service F remains the same whether V/C is 1.01 or 1.86, as was demonstrated in Appendix C. Table 2-5 fails to indicate the notable increase in congestion in the Kendall Square area, with or without the new NPC development.

Congested locations by 2028 increase both in number and severity by 2028, and Chapter 2 on “Assessment” says nothing about this important change. In the entirety of Chapter 2 the words “congestion” and “queue” do not appear once. Thus, the calculations may have been done for capacity but there is no summary, assessment or evaluation about congestion and queues.

Historically, traffic engineers have had difficulties measuring queues for the better part of a century, so finding a way to express accurate queue length results in an NPC is almost impossible. Calculation sheets in Appendix C have numerous notations to the effect that queue lengths cannot be accurately calculated and they may be “theoretically infinite.” These difficulties can be traced to failures in computer programs and the *Highway Capacity Manual* : they cannot be addressed and resolved in a Notice of Project Change. At a minimum, there should be an explanation in Chapter 2 why reporting on queue lengths in a coherent way is so difficult. Intersections of primary concern for queue impacts are busy locations close to each other, such as O'Brien Highway/First Street and Cambridge Street/First Street, as well as Binney Street/First Street and Binney/Land Boulevard.

INTERSECTIONS WHERE TRAFFIC VOLUMES EXCEED CAPACITY IN 2021 AND 2028

Existing year 2021 intersections show volumes of traffic exceeding capacity only twice, with V/C ratios of 1.03 and 1.27. No-Build growth over the next seven years to 2028 will result in 13 locations with volumes exceeding capacity. The No-Build condition for 2028 shows many intersections in the Kendall Square area will become significantly overloaded – even before adding in the increment of traffic from new NPC development. For the 2028 condition with 800,000 s.f. of new office space, 14 locations have volumes exceeding capacity, with V/C ratios as high as 1.86 in the morning peak.

NEED FOR TRAFFIC MITIGATION

The proponent has offered no specific traffic mitigation, even signal retiming, in the NPC, and proposes instead to negotiate any mitigation with the City of Cambridge, outside the formal MEPA process. Mitigation is an inherent part of the MEPA review process and should not be delegated at the decision of any proponent. Further MEPA review is needed.

TRANSIT ANALYSIS

The 2015 SEIR was notable because it was the first EIR analysis I have ever seen of Red Line Capacity submitted as part of a MEPA EIR. The results were most worthwhile. In 2015, a concluding assessment of transit service noted measurements of 8,600 riders per hour in one direction at the peak load point (Kendall Station) – a figure that contrasted with the calculated capacity of 4 ½ minute headway trains of 13,000 riders an hour -- if the trains are evenly spaced. By implication, running trains on-time would achieve a 50% improvement in service capacity. The common reference to unevenly-spaced transit operations is “bunching,” with some trains overloaded and other trains lightly loaded.

The current NPC made no reference to actual measurements of peak ridership, nor to common references to maximum capacity of a rapid transit track of 40,000 riders per hour. At the top of page C-30, a half-hour estimate of 10,860 passenger capacity translates into 21,720 riders per hour, assuming new Red Line cars operating at 3-minute headways with even spacing. The NPC failure to reference any measurements of existing ridership suggests that the NPC was unduly optimistic in estimated future ridership. The issue of MBTA train bunching should have been addressed directly. To my knowledge, the MBTA does not measure train or bus bunching and does not estimate the effects of uneven transit spacing. Any transit knowledge gained in the 2015 SEIR appears to have been lost. .

PEDESTRIANS AND BIKES : ALL SITUATIONS

Each Synchro calculation with full disclosure can produce eight sheets of paper, while the NPC reduces the output to only two pages. Unfortunately, pedestrian information is lost by this selectivity. The NPC offers no information on pedestrian volumes and delays, and as

with vehicle traffic, there is no evaluation. By contrast, at the September 28 joint CRA and Planning Board hearing, bicycle valet parking was the topic that dominated discussion by the Boards about transportation issues.

NEED FOR A SINGLE EIR : TRAFFIC, TRANSIT, AND ENERGY

Because of the major traffic problems forecast for the Kendall Square area, it should now be evident that the City of Cambridge and its development community must try to take action to mitigate this situation, it is evident that now is the time to act and to improve the quality of traffic results by using succinct summaries. MEPA should approve all submissions as demonstrably “adequate” only if accurate and useful in all vital respects. The 1,100-page NPC submission for Kendall Square does not meet such standards of quality in its present form – while failing to evaluate the results – and does not enhance planning needs for the area, except as a stimulus for improvements in documentation.

The proponent and the consultant team deserve appreciation for their effort to assemble a thorough document of information, even if there are missing aspects in the presentation. However, three locations stand out as omissions from an NPC assessment of traffic to and from Kendall Square. In recent years traffic backups from Leverett Circle have extended into the intersections of two locations along O'Brien Highway – at Museum Street and Land Boulevard. Thus Leverett Circle and Museum way should have been studied in the NPC analysis.

The traffic results for Memorial Drive at Mass Avenue show congestion and LOS F delays for right-turn movements. Please review the accuracy of these results compared to field observations. Instead, consider a key bottleneck location that affects Memorial Drive and Granite Street in Cambridgeport. Three years ago the Cambridgeport neighborhood was afflicted with near gridlock conditions because of traffic trying to get through the Reid Overpass rotary at Memorial Drive and onto the B.U. Bridge. The actual bottleneck is at Commonwealth Avenue on the Boston side, but heavy flows of traffic came from Memorial Drive, as well as Sydney, Waverly, and Granite Streets. Unfortunately, if the queues extend back into Cambridge, Granite Street can become blocked. When that happens, 300 families can become "traffic-quarantined" – meaning citizens are prevented from getting out. The problem occurs only in the afternoon peak.

The relevance of the B.U. Bridge problem is that Memorial Drive and Sidney Street are primary corridors for traffic to depart from the Kendall Square area. The B.U. Bridge traffic problem became a major crisis in 2018, with state highway officials, Cambridge and state house legislators involved looking for a solution. Since 2020, neighbors have been relieved of traffic blocking because of work-at-home and other COVID factors. However, Kendall traffic growth could bring back periods of Granite Street blocking, and once again 300 families could suffer being blocked in, with no access from emergency vehicles.

Therefore, I recommend that the scope for the traffic study should be expanded to include BU Bridge, Museum Way and Leverett Circle, while any locations with LOS A or B need not be considered further.

The Proponent has indicated a preference for the current NPC as sufficient to comply with the requirements of MEPA. The Notice does contain extensive traffic analysis and forecasts, with and without the proposed 800,000 s.f. of development. It has also considered innovative methods to reduce energy use by new buildings on-site, with significant energy savings. However, the traffic analysis is incomplete in its assessment of numerous future intersections that are likely to be severely congested in both the No-Build and Build situations by the year 2028.

Similarly, EverSource has prepared an energy plan for Kendall Square as well as a twenty-year projection of energy demands including new development. Unfortunately, this energy plan and related forecasts have not been made available to the public, so that for the purposes of MEPA review it becomes impossible to comment on the adequacy of current plans to meet future needs. There is nothing in the NPC to indicate how the transition from gas heating to electric heat will be accomplished in the coming years, or how future adoption of electric cars will affect electricity demand. A special priority for increased electric power is raising the capacity of transformers and related energy services. This planning should be available for public review and to meet the requirements of the MEPA process. Review and approval by EFSB will also benefit from better planning information, including goals similar to MEPA for reducing environmental impacts.

In addition to traffic and energy, more analysis and mitigation needs to be included in the transit capacity analysis.

Given the need for additional assessment of future traffic and energy demand, the solution may be found in following the 2015 solution of requiring a Single EIR -- to give the public and government agencies needed knowledge on the severity of future traffic congestion and on the ability of the energy plan to accommodate numerous changes in the energy market.


The NPC does identify important energy savings for NPC development, but offers no comprehensive plan for energy savings if applied as well to new No-Build development or to energy savings plans applicable to existing buildings in the Kendall Square area. It would be unfortunate to see the NPC as solely an energy generation and expansion project, when for reasons of climate change the inclusion of an energy saving program generally would represent a more positive and balanced consequence.

Consideration of a Single EIR should take guidance from the basic purposes of MEPA review :

“MEPA review is intended to facilitate (d) environmental planning for Projects requiring Agency Action, including an Agency's programs, regulations, or policies. It enables the Proponent and each Participating Agency to consider the positive and negative, short-term and long-term potential environmental impacts for all phases of a Project, and the cumulative impacts of the Project and any other Project or other work or activity in the immediate surroundings and region.”

301 CMR 11.01 (a) and (d) MEPA and Environmental Planning.

Sincerely,



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