

Memo

To: **Energy Efficiency Advisory Council**
From: **Eric Belliveau and the Consultant Team**
Date: **August 8, 2016**
Subject: **EEAC Consultant Team Proposed September 2016 - August 2017 Work Plan and Budget Request-DRAFT**

SUMMARY

Strategy for this Work Plan

As in the past, our work is divided into several advisory groups, representing the major areas of effort across the entire range of Consultant responsibilities and portfolio of PA programs. Within each, several work areas further clarify the tasks and topics that we plan to address over the coming year. Each advisory leader worked with representatives from DOER and others to define and present the information included in this work plan. In each section below, the Consultants worked to make sure EEAC priorities are embedded in our plan including tracking and reporting on the renter-specific and moderate income initiative development and implementation, enhanced approaches to multifamily housing finance, MTAC information, and more C&I updates (including street lights, LED costs and conversions, CHP, and significant innovations). In addition to being driven by EEAC priorities, the Team solicited Councilor input and incorporated experience from previous work plans. Where the topic did not change and the coverage remains the same, language from the previous plan was maintained.

PLANNING & ANALYSIS

Context

In 2016-2017, our work in the area of planning and analysis is primarily focused on several important outcomes.

- Supporting the Council in its efforts to develop a strategic vision for the future, in order to identify potential adjustments to the execution of energy efficiency and demand reduction leading up to the creation of the next Three-Year Plan.
- Supporting the Council in its efforts to ensure effective program and portfolio performance and to achieve the high goals in the 2016-2018 Three-Year Plan, including technical analysis and assisting with data and reporting systems.
- Supporting the Council in reviewing and assessing the results of the 2013-2015 Three-Year Plan, including analyzing successes and missed opportunities.

To work towards and facilitate these outcomes, we will group our efforts into the four major planning and analysis areas described below.

Work Area: Participate in EEAC Meetings; Brief and Support the Council

The Consultant Team will provide the Council with up-to-date information, analysis, and recommendations that help Councilors understand issues and facilitate decision making. The monthly Council meeting is the one place where all Councilors meet and consider new ideas, review Plan progress, and plan for the future. It is an effective and efficient way of communicating and generating a feedback loop that conveys the Consultants' activities and provides Councilors the opportunity to provide direction, responses to questions, and comments on findings. Communicating during the monthly Council meeting is also a practical reality considering the size of the Council and the requirements of open meeting law. In order for the Council and its meetings to be effective, the meetings are planned and supported by the Executive Committee, and both DOER and the consultant team provide informal briefings in advance.

In this iteration of the work plan, the Consultants are suggesting a more intense effort to solicit and integrate Councilor input between meetings and throughout the year. As is reflected in the individual sections below, we will seek to engage Councilors both more frequently but also more formally in one or two annual sessions aimed at soliciting Councilor priorities and finding the right way to synthesize the ideas into strategic topics—a kind of Council retreat or executive session. (This would need to comply with open meeting law). Councilors indicated that the workshops and briefing documents including in the 3YP development process were valued as a means to understand and vet competing interests and constituent desires. The next planning cycle will include historic changes to the energy efficiency landscape. Developing clear priorities for the Council based on information and data needs to predate the actual decisions associated with developing the Plan. Our proposal includes an increased effort on this front.

Also included in this plan is a process to explore the degree to which an increase in direct, in-person support for the Council may aid in fostering Councilor engagement. We will begin the process described above by gauging each Councilor's desire for Consultant interaction. Through this process, we will work with DOER to determine the activities not currently being supported or conducted by the Consultant Team and whether they can be covered by the current team or whether additional local resources are necessary.

SUPPORTING TASKS

- Prepare for and attend twelve Council meetings (and twelve Executive Committee meetings) to report to the Council on key activities and progress towards achieving the Council's priorities and to receive direction and feedback on Consultant Team tasks and work products.
- Provide input on the areas of focus and topics for upcoming meetings in advance.
- Provide independent technical support in advance of and during Council and Executive Committee meetings for all areas of energy efficiency and demand reduction planning, policy development, technical and economic analysis (cost-effectiveness), program design and implementation, reporting and analysis of results from 2013-2015, and tracking and monitoring of progress towards achieving the 2016 and 2016-2018 Three-Year Plan goals.
- Propose, Support, prepare, and provide (when assigned) briefing document, informal pre-meeting informational sessions or webinars on priority topics identified by the Council in its meeting/topics schedule.
- Propose, Support, prepare, and provide formal or informal information sessions potentially including an annual or biannual half-day session (a "retreat") on strategic planning in preparation for a host of decisions which will require extra attention from Councilors during the next planning cycle.
- Coordinate strategic planning efforts with the PAs through the more regular meeting of the Planning and Analysis Group (PAG).
- Provide individual briefings to Councilors on a rotating basis with a goal of talking to each Councilor at their desired frequency.
- Provide quarterly reports to the Council on all activities in which the Consultants engage.
- Assist with providing orientation for new(er) Councilors.

DELIVERABLES

This task's deliverables include Council and Executive Committee meeting attendance and presentations, briefing documents, informal pre-meeting information sessions and webinars, quarterly reports, and individual Councilor briefings.

Work Area: Planning and Analysis Support for Implementation of the 2016-2018 Plan

The Team will provide the Council with the requisite information and analysis to explore and understand future opportunities for energy efficiency and demand reduction programs. Planning years, like 2015, are not the most opportune time to consider significant changes in implementation models, performance mechanisms, tracking and recording tools, or innovation in EM&V, but the Council has specified these issues in its 2016 priorities. This section of our work plan is dedicated to helping the Council prepare, through early study, to assess potential changes in program development, program delivery and evaluation, and in the EE marketplace. This will include providing technical analysis to support the implementation of the 2016-2018 Plan, as well as considering and analyzing opportunities for future Plans. During 2016, the Council will develop and review longer term objectives. The topics schedule that the Council established in December 2015 for 2016 requires the Team to provide information on a variety of subjects outlined below.

SUPPORTING TASKS

In the Council priorities document it states that "...the Council will call upon its consultants to develop a research plan covering timely and appropriate areas for the Council to address, such as:

- Efficiency in relation to other customer-side resources, and their relative challenges and opportunities for the evolution of our energy system;
- The value of the timing of energy use;
- Geographically targeted deployment of efficiency and other customer-side resources and how this can address local needs, produce systemic benefits and avoided costs;
- Optimizing Massachusetts' grid and energy system (e.g. increasing electrification) given changing resources and priorities;
- New uses for electricity that benefits customers and society but may increase electric use."

The items below are tasks the Consultant Team will undertake in response to the stated Council priorities including special focus on innovations. Demand savings in Massachusetts are a high priority and finding answers and solutions is very important. The team has provided additional resources to this topic both by adding members to the team and by the level of attention to demand issues.

- Consider potential changes and improvements in implementation models where applicable, including reviewing and summarizing the models and experience from other states and around the world where applicable. This will include a report and presentation to the Council.
- Participate in and provide technical support for the Demand Savings Group as well as coordinate with the PAs on technical aspects of demand issues to feed into the Demand Savings Group and the Council's Demand Response Subcommittee. Provide analysis, review, summation, assessment of outcomes, etc. Under this task on demand and grid advancement there could be many aspects and permutations of the analysis:
 - Thought organization and scoping in order to understand the challenges associated with peak demand reduction and grid advancement. This will include a review of available studies plus a summary of past and current PA demand reduction offerings, coordinating with the PAs.
 - Coordinating with the PAs, identifying potential solutions to challenges for review and discussion.
 - Designing solutions to identified challenges for implementation.
 - Monitoring and assessing how well the solutions work.
 - Exploring opportunities for demand response for the summer of 2017. MA should have

some potential risk avoidance solutions ready by early summer 2017.

- Participate in and coordinate with the PAs through the Planning and Analysis Group. This group does not meet as regularly as the Management Committees but performs similar work to get ahead of planning, policy, and reporting issues. The Team will produce short memos or presentations based on the outcome of the meetings.

DELIVERABLES

Deliverables include analyses, additional memos as needed, and presentations to the Council.

Work Area: Provide Technical Analysis and Review/Assess PA Reporting

The Team will provide the Council with technical support on analysis and studies that directly affect the development and success of the Three-Year Plans. This includes verifying accomplishments and identifying PA trends; establishing and analyzing forecasts, avoided costs, cost-effectiveness, and economics; maintaining an up-to-date Technical Reference Library (TRL); and reviewing and analyzing all PA-submitted reports and data. A major new task in 2016 will be the review of the 2013-2015 Performance Term Report (the first three-year performance report) in August and September. The result of this analysis will be a memo with analysis and recommendations to the Council on plan approval.

Several areas of technical effort contribute to the planning, analysis, design, and implementation of energy efficiency and demand reduction programs in Massachusetts. The Council called out a number of specific priority areas for the 2016-2018 Three-Year Plans in its October 26, 2015 resolution, which are further reflected in the meeting topics chosen for 2016, including cross-sector topics. In addition, there are many relevant external factors and contexts that require information and analysis for the Council, such as the broader energy policy landscape in the Commonwealth and within the ISO-NE region, the federal Clean Power Plan, and related trends across the U.S. As a result, the Council requires concise, meaningful, targeted technical analysis and information on these topics and reports to support their deliberations and decision-making.

SUPPORTING TASKS

- Review and analyze the 2013-2015 Performance Term Report (the first three-year performance report ever completed) in August and September 2016. This will be a significant review of the results and performance of the 2013-2015 Plan, based on the final data and EM&V results that are available in 2016. A key task from the Council topics schedule is to identify lessons learned from past performance review.
- Review, analyze, and assess the PAs' reports and reporting, including the monthly dashboards and quarterly reports. Review trends and multi-year comparisons, and provide Consultant findings and recommendations to the Council. This task includes presentations to the Council throughout the year.
- Use the PA reporting to assess and report to the Council on the status of program achievement towards the 2016 and 2016-2018 Three-Year Plan goals and related topics. Identify and assess any data or programmatic trends which portend successes or challenges in program delivery and savings.
- Work with the PAs and the Council to design and implement further improvements to the PA reports, quarterly and otherwise, in response to Councilor feedback, including forward-looking projections and enhanced trend comparisons in the reports. For example, review and suggest changes to the PA Quarterly Report based on Council requests and for Council review. This task includes plan template suggestions and data presentation ideas.
- Review Mass Save Data and recent revisions, and provide feedback to the PAs. Provide input on future revisions and additions. Task includes ongoing discussions and written suggestions on potential changes.
- Provide technical input to and review of draft work products for the 2015 "Super Peak" addition to the Regional Avoided Energy Supply Component (AESC) avoided costs study, and participate in the study group meetings with representatives from the participating states. (Note: MA may also need to look more closely at capacity costs at times of peak; the AESC "Super Peak" work is

- focused on energy costs only, and therefore capacity avoided costs are not currently in the AESC expanded scope.) Task includes review of past studies, participation in study group and written and analysis output as needed.
- Review and analyze options for geotargeting efforts and the valuation and cost-effectiveness of geotargeting. Task includes a literature review and short memo on evaluations geotargeting programs and efforts.
 - Analyze cost-effectiveness screening, assessment of benefits and costs, and application of EM&V results and field experience; propose appropriate improvements for cost-effectiveness analysis and common screening tools. Task includes a memo reviewing current tools and suggestions for synthesis among MA PA tools.
 - Contribute to and review ISO-NE efficiency forecasting efforts, ensure the consistent and appropriate treatment of efficiency in the forecast, and review and provide comments on the work of the ISO-NE Energy Efficiency Forecast Working Group. Task includes participation in the working group and close coordination with DOER. Task includes reporting to the Council on outcomes and for interim decisions that determine key project direction.
 - Provide technical assistance for reporting and tracking of the Three-Year Goals and energy efficiency impacts for the Clean Energy and Climate Plan (CECP), including impacts of efficiency programs and other efficiency strategies on the 2020 CECP goals. Task includes memos and/or presentations to the Council as needed.
 - Analyze utility bill impacts and the relationship between program costs and efficiency savings experienced by customers through utility bills. Task includes a presentation to the Council on bill impacts versus sector savings achieved in Massachusetts.
 - Review, comment on, and contribute to the Technical Reference Library (TRL). Task includes review and comment as needed. This will be the first time we will see the digital TRL. We are not sure what will be needed.

DELIVERABLES

The consultants will work with the Council to outline work areas and determine the schedule and level of detail of work products not driven by statutory deadlines.

Work Area: Support the Council on Regulatory Issues and DPU Proceedings

The Team will provide Councilors with information on the wide range of DPU proceedings and regulatory issues relevant to ratepayer-funded energy efficiency and demand reduction programs in the Commonwealth. DPU proceedings progress on a related but somewhat independent schedule from the Council's internal workings and interactions with the PAs, yet can have significant repercussions on how the goals of the enabling legislation and the Three-Year Plans are pursued, and on the reporting of Plan results and achievement of those goals.

SUPPORTING TASKS

Track, monitor, review, summarize, and present to the Council information on all relevant DPU proceedings affecting energy efficiency and demand reduction programs, as assigned, including but not limited to the following:

- DPU 11-120 Phase I or subsequent proceeding, continuing the exploration of how best to determine energy and demand savings to account for multi-year time horizons and market effects, including the application of EM&V market effects studies and following up on the earlier DPU Order.
- DPU 14-05, for the application of the avoided cost values from the 2013 AESC study to the 2013-2015 Plan, including how the application of the 2013 AESC values affect the reporting of benefits in the 2013-2015 Performance Term Report.
- DPU 14-86, related to the application of values resulting from the ongoing DPU proceeding to establish values for environmental compliance costs.

- DPU 14-141, related to the implementation of the DPU Order on the Energy Efficiency Database.
- DPU 16-XX (forthcoming), regarding specific DPU proceedings to review the PAs' 2013-2015 Performance Term Reports (this regulatory proceedings task is in addition to the development of the Performance Term Reports and the technical review and assessment of the Reports, which are covered in the prior work area above).
- DPU 15-(160-169), related to implications of DPU Orders on the 2016-2018 EE Plans, and the associated support of the Council in the Plan approval process.
- Review and analyze any potential revisions to the DPU EE Guidelines coming out of Plan review or Performance Term Report review.
- There may be additional proceedings that the Council wishes the Consultants to cover including grid modernization as they relate to the continued delivery of the Three-Year Plan.

DELIVERABLES

Specific deliverables will vary depending on the level of involvement and Council needs, but may include analysis, participation and/or support for a technical session or hearing, memos or technical papers, and presentations to the Council.

RESIDENTIAL AND LOW INCOME

Context

The 2016-2018 savings goals require the Program Administrators to pursue all cost-effective opportunities through a range of measures, approaches, initiatives, and programs. Lighting, mostly represented by LED technologies, is presently the most significant contributor to residential and low income electric savings. However, falling LED costs, federal standards, and increasing socket saturation are rapidly transforming the residential lighting market. Lighting savings are likely to disappear entirely by the end of the decade and potentially sooner for the retail lighting initiative. Additional sources of savings must be identified and new and broader approaches to tracking and assessing savings should be considered.

The Residential Consultants plan to work collaboratively with the PAs to continue the national prominence of the Mass Save Residential and Low Income Programs. The basic framework includes focusing on Council priorities from the October 26, 2015 resolution and the 2016-2018 Plan Term Sheet, refining existing program strategies through implementation of continuous improvements, identifying additional cost efficiencies, effectively shaping and applying EM&V research and findings, and assessing new technologies and program approaches. At the same time, the anticipated magnitude of lost lighting savings, which comprise 83% of 2016-2018 Residential Sector electric lifetime savings and 60% of Low Income Sector lifetime savings, requires more than just work at the edges. The groundwork for potentially significant changes needs to start immediately in order to prepare for the 2019-2021 plan period. Maintaining robust lines of communication—including continuous feedback loops—with evaluation efforts, the PAs, and with the Council including its chair and DOER staff will be very important during this period.

Work Area: Technical Support for Programs and Effective Practices

The challenges of achieving the 2016-2018 goals and identifying substantial new sources of electric savings are substantial. The Residential Consultants' work priorities for 2016-2017 will be two-fold: 1) tracking goal achievement and implementation of commitments in the 2016-2018 Plan and term sheet, and 2) identifying and incorporating new and innovative technologies and approaches into the Massachusetts programs.

The Council and DOER have indicated that the following are priorities within existing programs:

- Implementing a renter-specific initiative
- Implementing a moderate income initiative
- Developing and implementing enhanced approaches to leveraging multi-family refinance events

in collaboration with the Commonwealth's housing finance agencies and LEAN, with specific consideration of performance-based retrofit products

- Executing Term Sheet commitments regarding new demand reduction/peak reduction efforts, innovation and technology, and contractor engagement

SUPPORTING TASKS

- Review, analyze, and report on 2016-18 Plan results. Particular focus will be on PA innovations and demonstrations and achieving lighting and new initiatives goals highlighted in the Council's final resolution
- Support development of continuous improvements, improved cost efficiencies, and other effective practices for the Residential and Low Income Sectors in consultation with the PAs, including identifying effective practices from other jurisdictions
 - Support assessing and refining new initiatives for renters and moderate income customers and enhanced approaches to leverage multi-family refinancing events to maximize retrofit potential; review PA reported data collected through jointly developed key performance indicators and present findings on new initiatives to Council at October 2016 meeting
 - Continue to assess trajectory of reduction in savings from lighting to the Residential and Low Income Sectors and potential impact on goals for 2016-2018 and 2019-2021, including by participating in the process to revise the lighting Market Adoption Model, tracking federal standards development and promulgation, engaging in relevant EM&V research, and monitoring program performance and technology and market developments in Massachusetts, the region, and nationally; advise Council as appropriate
 - Assess core residential programs in a post-lighting savings world; deliver findings to Council in memorandum or presentation by December 2016
 - Examine current Mass Save customer experience
 - Provide overview of technological innovations (e.g., controls, smart devices, enhanced use of data) supporting an evolution in energy efficiency program experience
 - Identify relevant market, cultural, and policy trends and potential program impacts
 - Identify innovative peer energy efficiency program features and designs that could be leveraged in Massachusetts
 - Collaborate with PAs to develop a review and assessment process for spring 2017 that engages a range of Mass Save stakeholders on the program's future taking into account the above information
 - Research and analyze complementing ongoing EM&V efforts to support a cost effective multi-family retrofit offering in 2019-2021
 - Assess opportunities posed by the revised Residential Conservation Services regulations and guidelines and other means to expand program services, including fuel switching and fuel displacement activities using thermal renewable technologies (e.g., heat pumps)
 - Analyze opportunities to increase cost efficiency of residential and low income programs
- Provide technical support to term sheet commitments regarding new demand reduction/peak reduction efforts, innovation and technology, and contractor engagement
- Track, interpret, and consult on new reporting metrics and information needed to support them, including investigating and proposing as appropriate alternative savings metrics to account for a shifting landscape for all fuels

- Advise on new technologies and approaches and the potential for savings and integration into the programs

Work Area: Participate in RMC and Council Meetings

The Residential Consultants regularly participate in meetings of the Residential Management Committee (RMC) and the Council in order to monitor progress of the PAs' implementation plans, to share information, offer analysis and context, and to be active participants in the design and delivery of the programs. Given the Council's favorable reviews of the workshop process supporting development of the 2016-2018 Plan, the Consultants plan to work with the Council and PAs to conduct two retreat sessions with similar formats during the course of the year. (We are not sure on the format or duration for the additional sessions. For now we are referring to this process as retreats)

SUPPORTING TASKS

- Review agendas and associated materials and/or coordinate with PAs to determine agenda content for RMC meetings
- Prepare and deliver materials (e.g., presentations) for the RMC and Council
- Develop two Council workshops, including working with Council and PAs on agenda development and supporting materials and presentations
- Produce other applicable output as needed with the goal of providing actionable advice for the Council and the PAs
- Report on relevant content of RMC discussions to the Council

Work Area: Coordinate with EM&V Efforts and Incorporate Feedback from EM&V and Studies into the Programs

The Residential Consultants actively engage in the EM&V process at all stages. The Team will review and provide input on draft evaluation plans to ensure that the highest priority issues from an implementation perspective are addressed in the scope of work. As the evaluation work is conducted, the Residential Consultants are in regular contact with our EM&V colleagues to review and comment on interim work products. Once a study is complete our team often discusses the findings with the RMC to determine how the findings will be addressed. Priority studies for the team this year include the Residential Customer Profile and Residential Baseline studies; as well as planned evaluations and market research studies for multi-family programs, Home Energy Services and lighting (several).

SUPPORTING TASKS

- Provide direction and guidance in study planning to ensure necessary data are collected, and useful data are reported
- Review studies and reports, perform additional analysis to interpret results, and present findings through memos, webinars, and presentations
- Produce applicable output as needed with the goal of providing actionable advice for the Council and the PAs

COMMERCIAL AND INDUSTRIAL

Context

Many market trends in Massachusetts that will have significant impacts on the C&I energy efficiency sector. Many trends indicate that C&I savings will increase by focusing on manufacturing processes and the transition to LEDs in linear lighting markets. There are countervailing trends in other areas including screw in lighting. It is important for our team to stay on top of the trends in its effort to assist the Council in understanding, and the PAs in reacting to, changing market forces, such as improving technologies, and driving some of the changes through the design

and implementation of the programs. As the Program Administrators refine the efficiency programs to adjust to changing markets, continuing to provide customer-facing offerings for all C&I customers remains a priority.

The Consultants plan to work collaboratively with the C&I Program Administrators to help meet the C&I savings goals. This work will include both a review of the past three years and an ongoing monitoring of the next three year plan to ensure lessons learned from the past are applied to the future. The goal is to ensure that the current programs are being delivered as effectively as possible, and to advise on innovative new approaches or best practices that may enhance implementation. In addition, there are new technologies coming to the market and existing technologies that may not be contributing at their full potential. The Consultants will continue to play a key role in providing technical support and advice to the Energy Efficiency Advisory Council on all these issues as they are defined and addressed. (The team is currently working with DOER on additional tasks in this section. We will have it complete for the Executive committee meeting on Wednesday August 3rd.)

Work Area: Technical Support for Programs and Effective Practices

The programs are the delivery mechanism for incentives and technical support for utility customers. How the programs are designed and delivered has a direct impact on the amount of savings achieved and where those savings are realized. Massachusetts has a well-established portfolio of programs that are delivering results. However, there are several areas in which there is the opportunity to either go deeper to realize greater savings, or to try different approaches to delivering services that will result in savings. As described below, two specific opportunities include heating, ventilation, and air conditioning and process savings and strategic energy management.

HEATING VENTILATION AND AIR CONDITIONING

Heating, ventilation, air conditioning (HVAC) systems consume over 50% of the energy used by commercial buildings in New England. In 2014, the Massachusetts PAs achieved over 17% of C&I electric savings from 8.8% of electric HVAC projects and over 40% of gas savings from 31% of gas HVAC projects completed that year. Significant opportunities remain to reduce the energy consumption of and improve the services provided by HVAC systems in Massachusetts's C&I buildings.

HVAC systems have characteristics that can present challenges to increasing their energy efficiency. These include:

- Diversity of system types results in a high degree of customization which increases costs
- HVAC systems are often centralized and critical to business operation making downtime for major retrofits costly
- Effective controls are more important to achieving energy savings than the efficiency of the equipment, so systems solutions are essential
- Savings frequently impact both electric and fossil fuel consumption and are often weighted toward fossil fuel
- HVAC system controls are proprietary reducing the number of vendors which increases costs and limits options for upgrades
- Skill levels in engineering and control programming are varied and generally limited when it comes to incorporating energy efficiency into HVAC systems

SUPPORTING TASKS

- Ongoing research of best practices across the industry.
- Work with the stakeholders in Massachusetts to assess the capacity of HVAC design and construction professionals and provide support for targeted workforce development activities as directed.
- Deliver presentations on successful HVAC projects and new approaches such as ASHRAE Standard 36 and the Better Building Alliance EMIS partnership.

- Continue to work with stakeholders in Massachusetts to increase the availability of resources in the region that will support cost-effective retro-commissioning projects as directed.

PROCESS SAVINGS AND STRATEGIC ENERGY MANAGEMENT (SEM)

The Manufacturing sector is critical to the Massachusetts economy and energy efficiency programs. Manufacturing accounts for more than 11%¹ of the state economy, savings from industry continue to increase year over year and savings from industrial process projects are typically highly cost-effective.

Strategic Energy Management (SEM) programs work at the organizational level to create a corporate culture that values energy management which drives measurable energy savings through behavior and operational changes. In addition to the behavior savings, SEM programs identify traditional capital projects through the increased focus on energy use.

SUPPORTING TASKS

- Identify best practices for realizing process savings from different size manufacturing customers.
- Identify ways the smaller Program Administrators, with their limited resources, could increase process savings
- Collaboration with the PAs and their consultant to identify successful SEM programs and approaches that could be applicable to Massachusetts
- Assistance in identifying barriers that would prevent successful implementation of a SEM initiative.
- Assistance in implementing an SEM initiative should the PAs decide to pursue this option.

DEMAND REDUCTION

As regional peak demand continues to rise, what can be done to slow or stop the increase? Energy efficiency programs claim savings and demand reductions, but the emphasis is normally focused on the energy savings. It may be possible to achieve increased demand savings if measures that have higher coincident demand reductions are prioritized and incentivized according to their demand savings.

SUPPORTING TASKS

- Identify where the programs can leverage current program designs or activities to emphasize demand reductions.
- Identify existing and emerging measures that have a significant impact on demand during the summer or winter peak.
- Provide analytic support for demand response initiatives

Work Area: Technical Support for New Technologies and Innovation

In order to increase savings, new technologies and ways to integrate these new technologies into the programs are necessary. Codes and standards may erode the opportunities for savings by raising baselines, but new technologies are constantly being developed and improved that may backfill these potential reductions. Once introduced into the market, new products typically decline in price as they become more common, but this process takes time. To accelerate their adoption by the market, new technologies usually need program support to overcome the normal market barriers to anything new, unknown, and more expensive. Program support can take many forms, such as the promotion of the technology, verification that there are benefits such as savings and reduced maintenance, and incentives that reduce the incremental cost.

LINEAR LED LIGHTING

One of the biggest shifts in the C&I sector will be the changeover from fluorescent linear lighting to LED lighting. How this shift is managed will have a big impact on how quickly this transition happens, and how much savings

¹ <http://www.aimnet.org/massachusetts-business-center/manufacturing-services.cfm>

are realized. To maximize savings, LED fixtures with integrated controls represent the best option for the most savings. Widespread adoption of LED fixtures with integrated controls will enable the achievement of all cost-effective savings from lighting efficiency projects, minimize lost opportunities and create a significant opportunity for demand management. Barriers to widespread adoption of fixture integrated LED controls include higher incremental cost and lack of market familiarity with new control technologies.

SUPPORTING TASKS

- The Consultant Team will review and advise on best practices for addressing these and other barriers to integrated controls including the California pilot program that is training electricians in lighting control technology and sales.
- The Consultant Team is highly engaged with evaluation of C&I lighting efforts which will continue to play an important role in keeping the PAs, Consultants and Council apprised of lighting measure performance and market impacts in this dynamic market.

UPSTREAM

Since debuting the C&I Upstream Lighting Initiative in 2011, the PAs have continuously improved and expanded upstream portfolios to include additional lighting products, HVAC equipment (2013), and water heating equipment (2015). The upstream initiatives leverage distributor and manufacturer networks and infrastructure to positively influence the purchase of higher efficiency equipment. These efforts have boosted the availability of efficient equipment and dramatically increased participation rates. The upstream initiatives are marketed and promoted by contracted third-party implementers.

The Consultants' December 2015 Upstream Memo reviewed the current programs, looked at national best practices and documented the PA plans for introduction of new equipment into the upstream initiatives. The Consultant Team is working to advance the following recommendations in our regular interactions with the PAs:

- Accelerate the review process that determines what measures are offered upstream
- Increase alignment between measures offered upstream for C&I and residential customers
- Regularly review upstream rebate levels and baselines (most frequent review is necessary to ensure savings in the rapidly changing LED lighting market).
- Increase diversity of LED fixtures offered upstream and stimulate the market toward integrated control

SUPPORTING TASKS

- Direct discussions with the PAs through the CIMC and Council meetings are the primary avenue for advancing these opportunities.

TECHNOLOGY AND BEST PRACTICES QUARTERLY BRIEFS

The consultant team will prepare a quarterly brief that identifies new programs, technologies and approaches identified through our regular review of energy efficiency programs and policies. These briefs will highlight changes and opportunities in energy efficiency offerings and activities across the country.

SUPPORTING TASKS

- Identify new or underperforming technologies/measures
- Advise on new technologies and the potential for savings and integration into the programs by working with the CIMC Emerging Tech Group.
- Track trends in measure adoption to identify opportunities for changes and improvements to the programs to encourage either a systems or multi-measure approach
- Advise on implementation strategies to help adoption of underperforming technologies
- Produce memos or presentations as requested by the Council

Work Area: Participate in CIMC and Council Meetings

The C&I Consultants attend a portion of all CIMC and some Council meetings in order to share information, offer analysis and context, and to be active participants in the design and delivery of the programs. The time allotted for Consultant participation in CIMC meetings provide an opportunity for collaboration and a free exchange of ideas between the PAs and the Consultants to improve the design and delivery of the programs.

The Consultants recognize that there is a great body of knowledge and experience represented by the Council members. The Consultants would like to better collaborate with the Council to leverage this knowledge of technologies and markets, and create joint presentations or other beneficial deliverables.

The Consultants propose to poll Councilors to identify their top three areas of interest and develop briefs on those topics similar to what was done for the last three-year planning exercise. The briefs can then be presented and discussed during the lunch-and-learn sessions prior to Council meetings.

SUPPORTING TASKS

- Poll the Council to determine what areas are of interest for research and discussion. Prepare briefs and presentations on these topics.
- Prepare and deliver presentations for the Council and CIMC
- Produce memos or presentations as requested by the Council
- Report on the impact of CIMC discussions to the Council

Work Area: Incorporate Feedback from EM&V and Studies into the Programs

Massachusetts has a comprehensive evaluation, measurement and verification process in place. However, it is critical for the lessons learned from the studies to be properly understood and applied to make changes in order to improve the programs and be most beneficial for the ratepayers of Massachusetts. Sometimes additional analysis and interpretation is necessary to apply the conclusions reached in the studies. The Consultants may also provide context to better put findings into perspective, which allows for better prioritization of PA effort.

One specific area of work is to monitor lighting baselines and attribution. The PAs should get credit for market effects that result from their activities and they shouldn't get credit when the market is moving of its own accord. Finding this balance and ensuring we use best practices for attribution over the next 5-10 years is essential to having a good track record and savings accountability. While developing the numbers and research falls in the EM&V court, the C&I consultants need to conduct research to help ensure MA is using best practice in attributing lighting savings given the very dynamic nature of the lighting market

SUPPORTING TASKS

- Provide direction and guidance in the planning of studies to ensure necessary data is collected, and useful data is reported
- Review studies and reports, and follow up with the PAs to determine if recommendations from evaluations are being incorporated into the programs
- Produce memos or presentations as requested by the council

EVALUATION, MEASUREMENT, AND VERIFICATION

Context

EM&V is a critical engine both for the EEAC Consultant Team and for the Commonwealth as a whole, providing objective and fact-driven results that help to ensure the reliability of savings claims, improve existing programs and support the development of new ones, and lay a solid foundation for the development of the next Three-Year Plan.

The 2009 Council resolution that established the Commonwealth's current EM&V framework assigns substantial responsibilities to the Council's Consultant. Working on the Council's behalf, the Consultant is charged with overseeing every phase of the EM&V process, including evaluation planning, contractor procurement, study implementation, reporting and outreach, and application of study results. While the Consultant must work closely

and collaboratively with the PAs, the resolution specifies that if consensus cannot be reached between the PAs and the Council Consultant, decision-making authority (subject to a system of appeals) rests with the Consultant as the Council's agent.

Since the establishment of the current EM&V framework in 2009, the Commonwealth's EM&V program has advanced by leaps and bounds in terms of scope and scale, methodological rigor, and institutional maturity. Overall EM&V spending increased roughly four-fold from 2009-2014 before stabilizing in 2015. The year 2015 saw the completion and filing of an overall Strategic Evaluation Plan (SEP) for the 2016-2018 period, and the completion of approximately 50 studies.

Objective

The preceding context helps to explain why all of our Team's tasks for the current work plan period are driven by a single overarching objective: to enhance and ensure the objectivity, accuracy, timeliness, and usefulness of PA-administered EM&V activities on behalf of the Council, as specified in the 2009 EEAC EM&V Resolution.

Our specific priorities in pursuing this objective in 2016 include the following:

- Moving in-progress and new studies through the detailed planning, implementation and reporting stages.
- Continuing to build the EM&V program's capacity to evaluate and provide analytic support for demand response initiatives. Providing a solid foundation of factual results to support the development of the next Three-Year Plan.
- Ensuring that savings claims remain reliable in the face of ever-increasing pressures on the PAs to meet savings goals.
- Continuing to build on several key over-arching research initiatives, including: (1) the annual Residential and Non-Residential Customer Profile studies that synthesize the tracking and billing databases of all of the individual PAs and analyze the results to provide useful insights into program outcomes, customer bases, and supply-side populations; and (2) top-down econometric research into overall net program impacts.
- Seeking to accelerate the study planning and implementation process to ensure the provision of timely results.

As the size of the EM&V program has grown in recent years, we have found it to be increasingly critical in managing the EM&V structure to carefully prioritize our work to focus on those studies, issues and EM&V functions that are most important to the Council. Both in the current work plan period and throughout the contract, we propose to work with DOER and the Executive Committee to shape our approach to managing the EM&V framework to the level of resources available for this function.

Overall Discussion of Timeline

Most EM&V functions are ongoing throughout the year. As discussed in the 2016-2018 SEP, in order to make the most effective use of resources, new studies are to be deliberately staggered to start and end throughout the three-year program cycle. As a result, the overall EM&V study portfolio generally remains in a roughly steady state. This means the EM&V team's involvement in most core functions is expected to be ongoing throughout the work plan period.

Overall Discussion of Deliverables

Because the 2009 EM&V Resolution specifies that EM&V in Massachusetts is to be a fully collaborative effort between the PAs and the Council's agents, many work products are developed jointly by the PAs and the EEAC Consultants. Work products can therefore be divided into two primary categories: those for which the EEAC Consultants have sole responsibility, and those that are the joint responsibility of the PAs and the EEAC Consultants. Joint work products generally include final reports, webinars, strategic evaluation plans, project-specific evaluation plans, and detailed quarterly status reports showing progress on all in-progress studies. EEAC Consultant-only deliverables generally include presentations to the Council (roughly bi-annual in recent

years); quarterly activity reports; and briefings of individual Councilors by phone, in person or by e-mail.

Work Area: Oversee EM&V Planning

This task encompasses the development of both overall strategic EM&V plans and detailed plans for individual EM&V projects. With the 2016-2018 SEP already in place, planning efforts in the current work plan period are expected to focus largely on completing the process of moving the individual EM&V projects laid out in the SEP into the implementation stage, as well as initiating plans for new projects as needed. Planning for individual EM&V projects focuses on establishing research objectives, determining data collection and analysis activities, setting budgets, assigning contractor staff, and laying out project schedules. In order to ensure consensus and maximize opportunities for stakeholder input, the planning process for individual studies includes three separate planning stages from the time a study is conceived and the time it is implemented.

TIMELINE

Due to the strategic staggering of studies, oversight of project-specific planning is expected to occur throughout the work plan period.

DELIVERABLES

EEAC Consultant-only deliverables include Council presentations, quarterly activity reports, and briefings. Joint EEAC Consultant/PA work products include project-specific evaluation plans, overall strategic evaluation plans, and monthly status reports.

Work Area: Oversee EM&V Study Implementation

This task involves overseeing the implementation of individual EM&V studies once they have completed the planning stage. EM&V study implementation can include a wide range of data collection and analysis activities, the specific nature of which varies by type of study. At any one time there are typically 40-60 EM&V studies in progress, divided between the three primary research areas of Residential, Non-Residential and Cross-Cutting. Each study can have as many as eight stages from draft scope to survey instruments to draft and final reports.

TIMELINE

Due to the strategic staggering of studies, oversight of study implementation is expected to occur throughout the work plan period.

DELIVERABLES

EEAC Consultant-only deliverables include Council presentations, quarterly activity reports and briefings. Joint EEAC Consultant/PA work products include interim reports, maintaining a schedule of studies—planning, launch and completion, webinars, and monthly status reports.

Work Area: Oversee EM&V Reporting

This task involves overseeing the development and dissemination of interim and final reports on EM&V studies. Final EM&V reports in Massachusetts generally need to go through multiple drafts, as various stakeholders provide comments that must be processed collaboratively. This task also encompasses overseeing the incorporation of impact evaluation results into the TRM/TRL.

TIMELINE

Due to the strategic staggering of studies, oversight of EM&V reporting is expected to occur throughout the work plan period.

DELIVERABLES

EEAC Consultant-only deliverables include Council presentations, quarterly activity reports and briefings. Joint EEAC Consultant/PA work products include final reports, webinars, monthly status reports, and posting summaries and studies to the EEAC website.

Work Area: Council and Stakeholder Engagement

This task includes working with the Council, individual Councilors, and stakeholders, both to incorporate their input into EM&V plans and reports and to brief them on study results through presentations and other forms of

outreach.

TIMELINE

Due to the strategic staggering of studies, and because Councilor and stakeholder engagement may be needed throughout the study planning, implementation and reporting process, this function is expected to occur at some level throughout 2015. We have budgeted for two in-person presentations at Council meetings, and also anticipate presenting or helping to present two webinars on individual studies or issues.

DELIVERABLES

In-person presentations, webinars, and one-on-one briefings by phone or e-mail, as needed.

Work Area: EM&V Policy Issues

This task involves advising the Council, individual Councilors and state agencies on EM&V aspects of policy issues. Some examples of EM&V policy issues we anticipate needing to work on in the work plan period include the following.

- Analyzing the policy implications of recent EM&V results that are expected to lead to substantial increases in low-income NEBs.
- Developing recommendations regarding implications of EM&V results for the evolution of policies and programs targeting rapidly changing lighting markets.
- Advising DOER and individual Councilors on national EM&V policy issues such as any further federal guidance regarding EM&V in support of the Clean Power Plan.

TIMELINE

The timing of EM&V policy issues in the Commonwealth tends to be driven by external factors, ranging from the timing of DPU decisions and PA responses to them, to directions from the Council. As a result, while work on this task is expected to be intermittent, we anticipate that it is likely to occur throughout the work plan period.

DELIVERABLES

Quarterly activity reports, Council presentations and briefings.

Work Area: Review and Coordinate With PAs on Potential Savings Studies

A key new task during the 2016-2018 program cycle will be working with the PAs on the potential savings studies required from each PA as part of the planning process for the 2019-2021 EIP. We view this as partially an EM&V function and partially a planning function, with EM&V focusing on the overall research design, data collection and analysis, and Planning and Analysis focusing on the development and application of the models that are used to convert available data into a forecast of achievable potential. We therefore propose to approach this as a cross-cutting task. This mirrors the approach we adopted to working with the PAs on their 2013-2015 potential studies.

TIMELINE

We anticipate that planning for the potential studies is likely to begin in the third quarter of 2016, with study planning and implementation continuing through the end of the work plan period.

DELIVERABLES

Quarterly activity reports, Council presentations and briefings.

TECHNICAL SERVICES

The Technical Services team is responsible for a variety of administrative tasks that support the Council's information sharing through the website including production of the Annual Report to the Legislature. These tasks are described in more detail below.

Work Area: Produce Minutes from all EEAC Meetings

The Team will ensure that minutes are collected from all meetings subject to the open meeting law and that these

minutes are circulated for comment, corrected, and issued in final form for posting to the EEAC website. In 2016, the Consultant Team will also take minutes at EEAC Executive Committee meetings.

Work Area: Website Updates, Revisions, and Maintenance

Much of the work on the EEAC website will be focused on regular and timely updates of the website content. The Team will also work to make changes or expansion in structure or organization of the website that are identified by the Council.

Work Area: Consultant Team Quarterly Report

The Team will continue to provide DOER and Councilors with a timely and meaningful report of Consultant Team activities. In previous years, the report has been produced monthly. Moving forward, the Consultant Team expects to produce activity reports on a quarterly basis.

Work Area: Produce the Annual Report to Legislature

In coordination and cooperation with DOER, the Team will develop a 2017 annual report for the DPU and Legislature. We will coordinate the contributions of the PAs, DOER, and other stakeholders to ensure that the Report reflects the collaborative nature of energy efficiency accomplishments in Massachusetts. A complete draft report will be submitted to DOER no later than 30 days after the PAs submit their 2017 Annual Reports, subject to receiving requested input on 2017 project highlights from the PAs in a timely manner.

DRAFT

PROPOSED BUDGET

The table below presents our high-level proposed budget by work area within each of the major Consultant Team advisory groups. This budget was developed based on our current understanding of likely Council priorities and projected activities, issues, and work products for 2016-2017. The tables below provide a summary and then each area in detail. The total budget for Year 1 of our new scope is \$1,371,000.

YEAR 1

	Staff	Role	Strategic Planning	Planning & Implementation	Oversight of EM&V	Coordinate Technical Services	Total Hours
Optimal Energy, Inc.	Eric Belliveau	Project Manager	142	761	32	40	975
	Philip Mosenthal	C&I Core Member	40	30			70
	George Lawrence	C&I Group Coordinator	650				650
	Gretchen Calcagni	Technical Services Group Leader/Analyst	75	360	60	205	700
	Mike Guerard	Residential Subject Matter Expert	92			48	140
	April Clodgo	Technical Services Core Member				105	105
	Mark Kravatz	Residential/LI/Healthy Housing Subject Matter Expert	130	150		60	340
	Craig Johnson	Technical Services Core Member/Analyst		110		135	245
	Jeffrey Loiter	Technical Services Core Member	42	55		23	120
	Matt Socks	Planning and Implementation Core Member	65	100			165
	Ralph Prah	EM&V Group Coordinator			950		950
	Jeff Schlegel	Planning and Implementation Group Coordinator		600			600
	Robert Wirtschafter	EM&V Core Member			225		225
AEC	Lori Lewis	EM&V Core Member			200		200
Cahoots	Carol Lasky	Technical Services Subject Matter Expert				70	70
	Anya Vedmid	Technical Services Subject Matter Expert				75	75
CEI	Margaret Lynch	Residential Group Coordinator	575				575
CX	Jennifer Chiodo	C&I Core Member/EM&V Subject Matter Expert	285		185		470
EFG	Glenn Reed	Residential Core Member/Lighting and Appliance Expert	400				400
LBNI	Mary Ann Piette	Demand Reduction Subject Matter Expert		70			70
	Courtney Moriarta	Residential Core Member/Residential Retrofit Expert	400				400
LABOR TOTALS			2,896	2,236	1,652	761	7,545
			\$523,595	\$402,350	\$303,075	\$101,605	
			\$14,000	\$17,000	\$8,000	\$1,325	
Totals			\$537,595	\$419,350	\$311,075	\$102,930	\$1,370,950

EEAC Consultant Team Proposed Year 2016-2017 Budget Detail by Staff and Task

2016-2017 Budget		Planning & Analysis			
Staff		Brief and Support the Council, attend meetings	Support the Council on Regulatory Issues & DPU Proceedings	Provide Technical Analysis	Support Three-Year Plan Implementation
Optimal Energy, Inc.	Eric Belliveau	400	65	146	150
	Philip Mosenthal				30
	George Lawrence				
	Gretchen Calcagni	60		200	100
	Mike Guerard				
	April Clodgo				
	Mark Kravatz	150			
	Craig Johnson			110	
	Jeffrey Loiter	20		20	15
	Matt Socks	0	20	60	20
Individual	Ralph Prah				
	Jeff Schlegel	200	150	200	50
IND	Mary Ann Piette	35		35	
SRA	Courtney Moriarta				
		865	235	771	365
		\$162,150	\$42,750	\$129,700	\$67,750
		\$11,000	\$2,000		\$4,000
		\$173,150	\$44,750	\$129,700	\$71,750

2016-2017 Budget		Residential			C&I			
Staff	Technical Support and Effective Practices	RMC and Council Meetings Participation	Coordinate and incorporate EMV Feedback	Technical Support for Programs and Effective Practice	Technical Support for New Tech and Innovation	Reporting Updates and Best Practices	CIMC and Council Meeting Participation	Incorporate EMV Feedback.
Optimal Energy, Inc.	Eric Belliveau	32			60		40	10
	Philip Mosenthal					20		20
	George Lawrence		60		150	120	140	110
	Gretchen Calcagni	25		10			40	
	Mike Guerard	82		10				
	April Clodgo							
	Mark Kravatz	110	20					
	Craig Johnson							
	Jeffrey Loiter	6	6	6	6	6	6	6
	Matt Socks				65			
Individuals	Ralph Prah							
	Jeff Schlegel							
	Robert Wirtschafter							
AEC	Lori Lewis							
Cahoots	Carol Lasky							
	Anya Vedmid							
Core	Margaret Lynch	200	240	135				
CX	Jennifer Chiodo				50	50	50	30
EFG	Glenn Reed	180	115	105				
IND	Mary Ann Piette							
SRA	Courtney Moriarta	275	115	10				
		910	556	276	331	196	276	140
		\$161,945	\$97,375	\$48,200	\$61,825	\$36,900	\$51,200	\$26,050
		\$2,500	\$1,000	\$200	\$3,000	\$2,200	\$2,000	\$2,100
		\$164,445	\$98,375	\$48,400	\$64,825	\$39,100	\$53,200	\$28,150
								\$41,100

2016-2017 Budget		EM&V				Technical Services			
Staff	EM&V Planning	EM&V Study Implementation	EM&V Reporting	Council and Stakeholder Engagement	EM&V Policy Issues	All EEAC Meeting Minutes	Website Updates, Revisions & Maintenance	Quarterly Consultant Team Report	2013-2015 Three Year Report
Optimal Energy, Inc.	Eric Belliveau					32		15	25
	Philip Mosenthal								
	George Lawrence								
	Gretchen Calcagni			60		20	100	40	45
	Mike Guerard						48		
	April Clodgo						105		
	Mark Kravatz					60			
	Craig Johnson					135			
	Jeffrey Loiter							8	15
	Matt Socks								
Individuals	Ralph Prah	200	200	200	175	175			
	Jeff Schlegel								
	Robert Wirtschafter	40	85	50	50				
AEC	Lori Lewis	40	105	45	10				
Cahoots	Carol Lasky						50		20
	Anya Vedmid						25		50
Core	Margaret Lynch								
CX	Jennifer Chiodo	60	60	35	30				
		340	450	390	265	207	215	328	63
	\$62,600	\$83,600	\$70,575	\$48,400	\$37,900	\$27,300	\$41,430	\$11,200	\$21,675
	\$2,000	\$500	\$2,000	\$3,000	\$500	\$825	\$500		
	\$64,600	\$84,100	\$72,575	\$51,400	\$38,400	\$28,125	\$41,930	\$11,200	\$21,675