



**UIL HOLDINGS CORPORATION**

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203-499-2000

VIA HAND DELIVERY AND ELECTRONIC MAIL

March 31, 2015

Robert Stein  
Chairman  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

Re: Docket No. F-2014/2015 - Connecticut Siting Council Review of the Ten Year Forecast of Electric Loads and Resources (2015-2024)

Dear Chairman Stein:

The United Illuminating Company ("UI" or the "Company") respectfully submits to the Connecticut Siting Council ("Council") an original and 15 copies of the Company's Report to the Connecticut Siting Council on Loads and Transmission Resources. On March 5, 2015, the Council granted the Company an extension to file the Report until March 31, 2015.

Please do not hesitate to contact me at (203) 499-2422 if you have any questions regarding this filing.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Bruce L. McDermott', written over a horizontal line.

Bruce L. McDermott  
Managing Counsel – Operations  
UIL Holdings Corporation  
As Agent for The United Illuminating Company

cc: Service List

Enclosure

**Report to the  
Connecticut Siting Council  
on Loads and Transmission  
Resources**

**March 31, 2015**

**The United Illuminating Company**  
180 Marsh Hill Road  
Orange, CT 06477

**The United Illuminating Company  
Report to the Connecticut Siting Council  
on Loads and Transmission Resources  
April 1, 2015**

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## **Section I. Load Forecast Update**

This section presents the results and a summary of the methodology for The United Illuminating Company's ("UI" or "Company") most recent ten-year energy sales forecast ("Sales Forecast") and ten-year system peak load forecast ("Peak Load Forecast"). The Sales Forecast is used for budgeting and financial planning purposes. The Peak Load Forecast is used by the Connecticut Siting Council ("Council" or "CSC") for resource planning purposes in Connecticut. The two forecasts use different forecasting methodologies chosen to fulfill their intended purpose.

### Sales Forecast Purpose & Methodology

The primary purpose of the Sales Forecast is to accurately project monthly sales-by-class that is then converted to a revenue forecast using electric service rates by class. The principal output of the Sales Forecast is monthly energy sales. UI utilizes the ten-year Sales Forecast for a number of purposes. A key use of the Sales Forecast is to project the energy sales as the basis for predicting revenue over the next 12 to 24 months. The UI Sales Forecast produces monthly forecasted energy sales weather-adjusted to "normal weather" or average weather conditions.

Weather has a large impact on both sales and peak load. Any analysis of the actual historical sales and peak load must consider the weather conditions under which those sales and peak loads occurred. The Company's sales forecasting process begins by weather-adjusting the actual, customer-class specific, historical sales data to the sales that would have been experienced under normal weather, using heating degree days ("HDD") and cooling degree days ("CDD") based on a standard of 65 degrees Fahrenheit for the transition from heating-based to cooling-based sales.

The sales forecasting process then moves to the creation of a Base Energy Sales Forecast which reflects the projected sales from UI's existing base of customers. The Base Sales Forecast development employs focused analytical processes that weather-adjusts and evaluates the most recent energy sales history of its customers, trends in the local and state economies and the sales forecast team's interpretations of how these factors are likely to impact UI's future monthly sales.

The impact to sales from Conservation and Load Management ("C&LM") and Distributed Generation ("DG") currently on the UI system are embedded in the historical data used to develop the Base Energy Sales Forecast, and therefore, the future impact of these resources is accounted for in the Base Energy Sales Forecast results. UI adds to the Base Energy Sales Forecast the projected future annual impact of incremental additions of new C&LM and DG to account for the future additions of these resources.

In addition, UI adds an estimate of sales resulting from specific, new customers projected by UI's Economic Development group. The addition of new customers is another variable that can materially impact sales and peak loads. UI's Economic Development group creates regular projections of new customer additions and deletions to the system based on their interaction with state municipalities, UI Account Managers, potential developers and businesses. These new loads include expansions of existing UI customers, redevelopment of existing areas and new "green field" construction. UI's final Sales Forecast results from the summation of the normal weather-adjusted Base Energy Sales Forecast and new large customer sales along with the decrement to sales due to projected C&LM and DG.

## Peak Load Forecast Purpose & Methodology

The purpose of the peak load forecast shown in Exhibit I is to allow the Council to effectively forecast and evaluate the demand and supply balance in Connecticut. The primary output of UI's Peak Load Forecast is the forecast of system peak loads under both normal and extreme weather conditions. Normal weather or average weather, also referred to as a 50/50 forecast, refers to a probability-based weather normalization of the historical usage data. A 50/50 weather normalization indicates a 50% probability of being exceeded and a 50% probability of falling short of the forecasted value in any given year. Extreme weather, also referred to as a 90/10 forecast, indicates that the forecasted extreme weather-adjusted system peak has a 10% probability of being exceeded on the system peak day, due to weather conditions. In other words, the forecasted 90/10 peak load will be exceeded once every ten years. The Company updated the weather normals in 2014 with recent weather data. The new normals were used to normalize the historic actual system peaks and to develop this year's peak load for both the 50/50 and 90/10 forecasts.

The UI Peak Load Forecast is a derivative of a quarterly sales forecast and forecasted customer class-level load factors. The forecast of quarterly sales used for the Peak Load Forecast is strictly an interim calculation step that utilizes a different forecasting methodology than the revenue-focused Sales Forecast described above. The Peak Load Forecast is derived from weather-adjusted sales that use an average monthly temperature methodology to weather-adjust the sales. This is different than the method used in the revenue-focused Sales Forecast described in the prior section. For the Peak Load Forecast development, the Company first uses customer-class specific regression models to weather-adjust the historic sales data to equivalent sales that would be seen under normal weather conditions based on 30-years of historical weather data. The normal weather-adjusted sales data is then used to develop a series of

econometric models for each major customer class which relates the sales to economic and demographic drivers, obtained from independent sources. The parameters used in the individual econometric models vary by the customer class. The models are then used to produce forecasts of quarterly sales for each major customer class under normal weather conditions.

Next, UI calculates the weather-adjusted historical system peak loads for both normal weather and extreme weather conditions. The weather-adjustment for historic peak loads is based on a model that relates the twelve-hour average Temperature Humidity Index (the output of a mathematical formula that combines temperature and humidity into a single number) to historical summer weekday peak loads (THI Model). The THI Model is then used to adjust historic peak loads to the loads that would have been seen under normal or average temperature and humidity conditions and for extreme conditions.

The weather-adjusted sales and peak loads in conjunction with load research data are used to calculate historical class-level load factors and forecast class-level load factors for both normal and extreme weather conditions. The forecasted class-level load factors are then used to translate the class-level annual sales into a Base Load Forecast for both normal and extreme weather-adjusted conditions. The impact to the peak load from C&LM and DG currently on the UI system are embedded in the historical data used to develop the Base Peak Load Forecast. Similar to the Sales Forecast, the Company accounts for projected new C&LM, DG and new or removed large customer loads separately. UI's final Peak Load Forecast results from the summation of the Base Load Forecast and new or removed large customer loads along with the adjustments due to additions of new C&LM and DG.

## **Normal Weather-Adjusted Historical and Forecasted Data**

The data shown in Exhibit 1 includes actual historical data for system energy requirements, sales and peak load. Exhibit 1 also includes historical and forecasted sales and peak load adjusted to normal weather conditions. UI is a summer peaking utility primarily due to the air conditioning loads on its system. During recent history, between 2005 and 2014, UI has experienced a decline in normal weather-adjusted sales of 10.9% as compared to a simultaneous decline in its normal weather-adjusted peak load of only 6.8%. This is attributed to changes in customer behavior regarding energy usage and the economic recession. It should be noted that in five of the last ten years of historical data (2006, 2010, 2011, 2012, and 2013); the actual peak load has exceeded the normal weather-adjusted peak load. This exceedance is consistent with the design of the normal weather adjustment in that typical variations in weather alone will cause the normal weather-adjusted value to be exceeded 50% of the time on the peak load day. This recent history of peak loads reinforces the need for the Company to consider extreme weather in its Peak Load Forecasts. The forecast of the normal weather-adjusted peak load projects a growth of 10.3% or 0.99 % compounded annual growth rate between 2014 and 2024.

## **Extreme Weather-Adjusted Historical and Forecasted Data**

In addition to the normal weather-adjusted data, Exhibit 1 also shows historical and forecasted peak loads adjusted to extreme weather conditions. The 2005 to 2014 historical data in Exhibit 1 shows a decline in the extreme weather-adjusted historical Peak Loads of 5.9%. The Company's extreme weather-adjusted Peak Load Forecast shows an increase of 9.7% or 0.93% of compounded annual growth rate during the period from 2014 to 2024.

The ability to predict when extreme weather will occur or the exact amount of economic activity that will be realized is always problematic. Therefore, prudent planning requires that the possibility of the effects of extreme weather (i.e., high temperatures and high humidity) within the forecast time period be recognized, as well as appropriate assumptions of future economic development activity. Plans must be formulated to meet this possible demand. The bounds of the Company's forecasts from the normal and extreme weather-adjusted scenarios are intended to provide a plausible range of futures. No single forecast will be accurate throughout the forecast period. When extreme weather occurs, regardless of the timing, the system infrastructure must be in place to serve the load safely and reliably.

## **Distributed Generation**

The Connecticut General Assembly passed a landmark legislative initiative in 2005: Public Act 05-01, June Special Session, *An Act Concerning Energy Independence* (“PA 05-01”). The implementation of the Act, carried out by the former DPUC, provided monetary grants to offset the capital cost of installing DG, but the program was discontinued for all projects that submitted applications on or after October 14, 2008. The program successfully added about 36 Megawatts of DG capacity in the UI service territory. The program also successfully added 7.6 MW of Emergency Generation capacity required to operate in the Independent System Operator – New England (“ISO-NE”) demand response programs.

On July 1, 2011, Governor Malloy signed into law Public Act 11-80, *An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut’s Energy Future* (“PA 11-80”). Section 103 of PA 11-80 establishes a three year pilot program to promote the development of combined heat and power projects, a three year pilot program for anaerobic digestion projects to generate electricity and heat, and a Low & Zero Emission Renewable Energy Credit (LREC/ZREC) program that is expected to drive the development of Class 1 Renewable Resources through a five year solicitation program administered by both utilities in Connecticut. The PA 11-80 DG pilot program offers significantly lower dollar incentives than those provided through the earlier program established in PA 05-01, capped at \$200 per kilowatt of capacity. Capacity built via the LREC/ZREC program is dependent on the outcome of the solicitation program. UI will continue to monitor the development of the DG pilot program established through PA 11-80.

All grants approved through the PA 05-01 DG program that have not been built, totaling 8.5 Megawatts<sup>1</sup> of capacity, have expired. There is no reason to believe that customers who had approved grants and chose not to construct a DG unit will decide to do so with current incentives. Tracking will commence following any new projects potentially submitted after the Department of Energy and Environmental Protection (“DEEP”) re-initiates or establishes a new program. Even with the grants made available, each customer must decide for themselves, within the timeframe allotted, whether the installation is economically attractive.

In development of the sales forecast shown in Exhibit 1, those projects no longer anticipated have been excluded from the sales forecast. In development of the peak load forecasts presented in Exhibit 1, all of the operational units have been included as offsets to load (utilizing actual generator output).

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<sup>1</sup> Operational DG output is based on capacity listed on grant application and not the actual generator output.

## **Conservation & Load Management**

By statute and regulation, Connecticut supports expanded investments in the state's C&LM programs. The state is required to give priority to energy efficiency and demand side management, specifically stating that "resource needs shall first be met through all available energy efficiency and demand reduction resources that are cost-effective, reliable and feasible."

Pursuant to Conn. Gen. Stat. § 16-245m, as amended by Connecticut Public Act 13-298m the Company is required to develop a plan to implement cost-effective C&LM programs which the DEEP Commissioner has the authority to approve, modify, or reject. In PURA Docket 13-03-02, *PURA/BETP Consideration of 2013-2015 Conservation and Load Management Plan* ("Plan"), a Decision approving the 2013-2015 C&LM Plan and budgets was issued in October 2013. This decision represents a significant ramp up in funding for energy efficiency programs. Consistent with the findings of the 2013 Comprehensive Energy Strategy for Connecticut, the Decision highlights the primary role of energy efficiency in reducing the state's energy consumption while growing its economy and reducing harmful pollutants associated with energy use.

Funding for the state's electric and gas C&LM programs derives from a variety of sources. Since 1998, electric C&LM programs have been primarily funded by a charge of three mills per kilowatt-hour (kWh) collected from electric ratepayers, which is mandated under Conn. Gen. Stat. § 16-245m(a). The electric C&LM budget has also been supported by proceeds from the sale of carbon dioxide (CO<sub>2</sub>) emission allowances to the power sector through the Regional Greenhouse Gas Initiative (RGGI), and revenues from the ISO-New England Forward Capacity Market (FCM). After January 1, 2014, C&LM programs are no longer eligible to receive revenues from the sale of Class III Renewable Energy Credits.

Additionally, Conn. Gen. Stat. § 16-245m(d), as amended by P.A. 13-298, provides for PURA to ensure that additional revenues required to fund the approved C&LM budget are “provided through a fully reconciling conservation adjustment mechanism for each electric company of not more than three mills per kilowatt-hour of electricity sold to each end use customer of an electric distribution company during the three years of any Conservation and Load Management Plan.”

Certain funds from the RGGI augment the three-mill Public Benefits Charge on customers’ electric bills. RGGI is the first mandatory, market-based effort in the United States to reduce greenhouse gas emissions. The participating RGGI states cap allowable CO<sub>2</sub> emissions, sell emissions allowances through auctions, and use the auction proceeds to fund energy efficiency, renewable energy, and other clean energy programs and technologies.

In 2010, the transition period for the FCM ended, and the permanent FCM was put in place beginning June 1, 2010 by the ISO-NE. As New England’s energy markets continue to develop and evolve, the Company continues to be an active participant in the development of the ISO-NE stakeholder process to refine the markets. The FCM allows market participants to bid their peak demand savings into the capacity market. Market participants earn capacity payments for qualifying resources, such as distributed generation, energy efficiency, load management or load response. This was the first time in the United States that reduction in demand through energy efficiency and demand response programs was considered as electrical capacity equivalent to supply-side generation sources. Additional electrical capacity “produced” through the implementation of efficiency and load management measures becomes a resource, which can then be bid to ISO-NE similar to new generation. UI has entered peak demand savings from energy efficiency and load management projects since the transition period for the FCM on behalf of the Connecticut Energy Efficiency Fund and has successfully bid capacity in the first

nine capacity auctions, with a tenth auction scheduled for February, 2016. ISO-NE filed *Proposed Revisions to Market Rule 1 of the ISO-NE Tariff with FERC* in 2014 which had potential implications for the participation of ratepayer-funded energy efficiency (EE) programs in the Forward Capacity Market (FCM). The FERC decision required ISO-NE to revise the tariff in regards to energy efficiency resources.

PA 11-80 assigned the responsibility for development of the 2012 Integrated Resource Plan (“IRP”) to the DEEP. PA 07-242, *An Act Concerning Electricity and Energy Efficiency* (“2007 Act”), established the initial integrated resource planning process, which resulted in the EDCs preparing the three previous IRPs. DEEP produced the report in consultation with the EDCs and with analytical assistance from The Brattle Group, an economic consulting firm. The 2012 IRP presents a long-term, “Expanded EE” resource scenario for Demand Side Management (“DSM”). The Expanded EE forecast reflects a major expansion of current programs and was constructed based on the 2010 Connecticut energy efficiency potential study completed by the Energy Conservation Management Board (“ECMB”)<sup>2</sup>. The IRP predicts that achieving this potential would cause Connecticut’s energy consumption to decline by 0.4% per year while supporting a growing economy.

The 2014 IRP was issued on March 17, 2015. The 2014 IRP still supports the commitment to energy efficiency. It recommends continued investment in energy efficiency to maintain a critical offset to load growth resulting from economic activity.

The 2012 IRP provided input into Governor Malloy’s Comprehensive Energy Strategy (CES). In support of the CES the EDC’s prepared a 3-year (2013 through 2015) C&LM plan that included two scenarios, an “Increased Savings” scenario and a business-as-usual “Base Budget” projection. The Increased Savings scenario results in more than doubling both the

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<sup>2</sup> In 2010 the ECMB changed its name to the Energy Efficiency Board (“EEB”).

annual savings and the associated budget. The approval of this major expansion of the energy efficiency programs, puts the state on the right path to have 80% of the state's homes to be weatherized by 2030, another goal established in PA 11-80.

The October 2013 decision to PURA Docket No. 13-03-02 approved the expanded budget subject to modifications, one of which was a 66% reduction of the proposed savings programs budget. The Company submitted an update to the Plan on March 1, 2014 that included revised savings goals for 2014 and 2015 to be achieved with these modified budgets. The Company submitted an update to the 2015 Plan on December 23, 2014 incorporating revised budgets and savings goals for 2015.

DEEP approved the 2015 Update Plan on February 20, 2015. The peak load forecasts and the sales forecast now both reflect the 2015 annual update plan. While the original three year Plan included the unusual instance of having two different proposed C&LM budgets, the savings and peak forecasts now reflect one C&LM budget.

The Energy Independence and Security Act of 2007, a nationwide lighting efficiency standard ("Lighting Efficiency Standard") is fully reflected in the Plan savings. The purpose of the Lighting Efficiency Standard is to introduce minimum energy performance standards for standard incandescent bulbs that will, over a period of time, remove inefficient lighting products from the marketplace. Incandescent bulbs will continue to be available if they meet the Lighting Efficiency Standards guidelines. Non-standard bulbs will likewise not be affected by the 2012-2014 standards.

These federal standards lower the energy consumption of a standard incandescent bulb, effectively reducing the energy savings of general service Compact Fluorescent Light bulbs ("CFLs") and LEDs in the C&LM programs.

As lighting makes up a significant portion of the program offerings and savings in every sector, particularly concerning in the residential programs, UI continues to monitor the development of lighting products that meet the new standard to determine what savings may be achieved from the installation of CFLs. In addition to determining the role of CFLs as an energy saving technology, UI is concentrating on increasing market share of LEDs. There is an increased demand for LEDs, driven by the rapidly declining price of many LED products and increased adoption of LED technology. However, despite declining LED costs, they are still typically significantly more expensive than comparable incandescent or CFL technologies. Many LED bulbs have been ENERGY STAR qualified for replacement of typical 60-Watt and lower incandescent bulbs and are being promoted through special pricing from the CT Energy Efficiency Fund.

The strategic focus of UI's programs is the result of a multi-level collaborative process involving UI and a diverse group of stakeholders. These stakeholders include: the DEEP, the Energy Efficiency Board, Connecticut state government, consumer and business interests, national and regional environmental and energy efficiency organizations, design professionals and energy services providers.

UI participates in national and regional activities to develop a long-range focus for energy efficiency. UI partners with the Consortium for Energy Efficiency ("CEE"), the American Council for an Energy-Efficient Economy ("ACEEE"), Northeast Energy Efficiency Partnerships ("NEEP"), and other utility and public benefit fund organizations. Together with these partners, UI is involved in regional or programmatic evaluations, market baseline research, development of efficiency standards, exchange of programmatic ideas and concepts, and the assessment of the need for incentives. These efforts have produced many of the energy efficiency concepts and measures upon which the programs are based.

## **Section II. Transmission Planning**

UI projects included in this report help UI fulfill its obligation to provide reliable service to its customers and to meet the reliability standards mandated by national and regional authorities responsible for the reliability of the transmission system, i.e., the North American Electric Reliability Corporation (“NERC”), the Northeast Power Coordinating Council (“NPCC”) and ISO-NE.

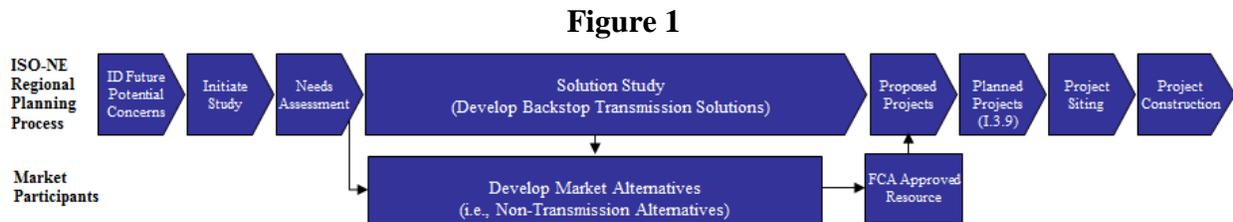
### **Transmission Planning – National and Regional Reliability Standards**

In 2006, the Federal Energy Regulatory Commission (“FERC”) designated NERC as the nation’s Electric Reliability Organization (“ERO”). FERC approved mandatory reliability standards developed by NERC in 2007. These mandatory reliability standards apply to UI as a transmission owner (“TO”) and as a transmission planner (“TP”) of the bulk power system, as designated by NERC through its compliance registry procedures. In addition to satisfying NERC reliability standards, UI must also satisfy NPCC and ISO-NE reliability standards. Both monetary and non-monetary penalties may be imposed for violations of the NERC, NPCC, and ISO-NE Reliability Standards.

### **Transmission Planning Process**

ISO-NE, as the registered NERC reliability authority, along with UI and Connecticut Light & Power (“CL&P”), as the TOs in Connecticut, must comply with NERC and NPCC planning standards by performing reliability assessment studies of the transmission system. Needs Assessments in sub-areas such as Southwestern Connecticut (“SWCT”) are performed to identify system needs over a ten year horizon. If a reliability problem is identified from a Needs

Assessment, ISO-NE, and the TO’s develop transmission alternatives to ensure NERC, NPCC, and ISO-NE reliability standards are met. The developed transmission alternatives provided by the TO’s and ISO-NE are considered the “backstop” solution to ensure future system reliability and compliance if market conditions do not change in the future. Viable transmission alternatives are compared for their construction feasibility, environmental impact, overall cost, longevity along with their operational and reliability performance and effectiveness. Following study completion, TO’s recommend a preferred transmission solution to ISO-NE, the Planning Advisory Committee (“PAC”), and the New England Power Pool (“NEPOOL”) Reliability Committee. The Needs Assessments, Solution Studies, and approval of preferred transmission solutions are the basis for ISO-NE’s Regional System Plan (“RSP”). Figure 1 below depicts the ISO-NE Regional Planning process.



### UI Proposed Transmission Projects

To address future reliability needs and consistent with the process described above, UI has multiple reliability projects at various stages in the process. UI's current transmission system projects are listed in Exhibit 2. These projects as well as recently completed projects are outlined below.

To address reliability, substation capacity, voltage support, aging infrastructure, and fault duty limitation issues in the UI service territory, UI requested and has received Declaratory

Rulings from the Council that no Certificates of Environmental Compatibility and Public Need are required for the following projects:

- Union Avenue – Metro North 115/26.4-kV Substation Project– UI completed the 115-kV supply portion of the project in November 2011. Metro North completed the 26.4-kV substation portion of the project in early 2014.
- NERC FAC-008 Compliance Program – In 2013, UI received a Declaratory Ruling from the CSC involving this project, which addresses several 115 kV line National Electric Safety Code (NESC) clearance violations along the railroad corridor between Stratford and West Haven. This project is expected to be completed by June 2016.
- Elmwest 115/13.8-kV Substation Control House Replacement Project - West Haven. UI completed this control house project that addressed existing control room physical congestion issues in December 2014.
- Sackett 115/13.8-kV Control House Upgrade Project - North Haven. In 2014, UI received a Declaratory Ruling from the CSC involving this project, which will address obsolete 13.8-kV distribution switchgear and control room physical congestion issues. The projected in service date of the Sackett 115/13.8-kV Control House Upgrade project is October 2015.
- Milford 115-kV Railroad Line Upgrades – Also in 2014, this project, which will address the need for increased thermal capability for the 115-kV overhead railroad lines between Milvon Substation, Milford and Devon Tie Switching Station, Milford received a Declaratory Ruling from the CSC. New transmission structures with larger capacity conductors are recommended along this 1.4 mile

transmission line corridor. The in service date of this project is expected to be December 2016.

### **Other Identified Reliability Projects / Concerns**

#### Substation Projects:

The Pootatuck Substation Project, a new 115/13.8-kV substation, is needed to address distribution reliability and capacity issues related to substation thermal overloads and voltage collapse concerns in the greater Shelton area. In 2013, UI received a certificate of environmental compatibility and public need for this project (formerly known as the Shelton Substation project), which is expected to be in service by June 2015.

#### Southwest Connecticut Needs Assessment:

UI, along with ISO-NE and CL&P, completed a long term (2022) reliability Needs Assessment of the Southwest Connecticut (SWCT) area in 2014. This assessment's objective was to evaluate the reliability performance of SWCT in meeting NERC, NPCC, ISO-NE, CL&P and UI standards and criteria. The study was conducted in accordance with the regional planning process as outlined in Attachment K of the ISO-NE Open Access Transmission Tariff ("OATT"). This study identified reliability transmission needs in the greater New Haven, greater Bridgeport, and Naugatuck Valley areas of UI's service territory related to capacity limitations, unacceptable voltage performance, and high short circuit current levels. Additional

details of specific reliability concerns/needs are provided in the SWCT Needs Assessment report, dated June 23, 2014, which is posted on the ISO-NE website<sup>3</sup>.

A second study, the ISO-NE SWCT 2022 Area Transmission Solution Study, developed and analyzed transmission solutions to address the needs identified in the 2022 SWCT Needs Assessment. As a result of the ISO-NE SWCT Area Transmission Solution Study, at the July 15, 2014 PAC meeting, ISO-NE presented the SWCT Preferred Solutions for the New Haven Bridgeport and Naugatuck Valley Areas. Based on UI's involvement in ISO-NE's re-assessment of the SWCT Needs Assessment and Solution Study, UI anticipates making the following New Haven Bridgeport and Naugatuck Valley Area project filings to the CSC in either 2015 or 2016:

- Hawthorne 115-kV Capacitor Bank Additions – This substation upgrade includes the addition of two 20 MVAR 115-kV capacitor banks at Hawthorne Substation in Fairfield. UI anticipates completing this project by April 2016.
- Mix Avenue 115-kV Substation Modifications – This substation upgrade includes the addition of two 20 MVAR 115-kV capacitor banks, a 115-kV series reactor and upgrades to a 115-kV terminal at Mix Avenue in Hamden. This project is expected to be in service by December 2017.
- Ansonia 115-kV Capacitor Bank Additions – To provide necessary voltage support, this substation upgrade includes the addition of two 25 MVAR 115-kV capacitor banks at Ansonia Substation in Ansonia. UI anticipates completing this project by December 2017. This project replaces in part the Naugatuck Valley 115-kV Reliability Improvement Project, which has been removed from Exhibit 2, “Transmission System Planned Modifications.”

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<sup>3</sup>[https://smd.iso-ne.com/committees/comm\\_wkgrps/prtcpnts\\_comm/pac/ceii/reports/2014/final\\_swct\\_2022\\_needs.pdf](https://smd.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/ceii/reports/2014/final_swct_2022_needs.pdf)

- Pootatuck 115-kV Substation Modifications – This substation upgrade includes the addition of three 115-kV circuit breakers and a 30 MVar 115-kV capacitor bank at Pootatuck Substation in Shelton. This project, which is required for area voltage support, is expected to be in service by December 2017. This project replaces in part the Naugatuck Valley 115-kV Reliability Improvement Project, which has been removed from Exhibit 2, “Transmission System Planned Modifications.”
- Bridgeport - Stratford 115-kV Railroad Line Upgrades – The 115-kV overhead lines between Congress Substation, Bridgeport and Baird Substation, Stratford require increased thermal capability. New transmission structures with larger capacity conductors are proposed along this 2.4 mile transmission line corridor. UI anticipates completing this project by May 2018.
- Baird – Housatonic River 115-kV Railroad Line Upgrades - The 115-kV overhead lines between Baird Substation, Stratford and the Housatonic River in Stratford require increased thermal capability. New transmission structures with larger capacity conductors are recommended along this 2.26 mile transmission line corridor. UI anticipates completing this project by April 2019.

Other Substation/Transmission Projects Requiring CSC Approval:

UI anticipates making a filing in 2015 requesting Declaratory Ruling for the Housatonic River Crossing project, which addresses issues with railroad corridor lattice transmission line structures that currently do not meet minimum NESC loading criteria. The proposed solution is to relocate UI 115-kV facilities along this Stratford-Milford railroad corridor onto new

monopoles. The projected in service date of the Housatonic River Crossing project is March 2016.

Also in 2015, UI anticipates making filings regarding significant upgrades to Baird 115/13.8-kV Substation. To address transmission thermal overloads, distribution voltage regulation issues and control room space restrictions, Baird Substation, originally constructed in 1963 in Stratford, will require a new 115/13.8-kV substation built near the current substation location. The projected in-service date for the Baird 115/13.8-kV Substation Rebuild project is December 2017.

Bridgeport's Old Town Substation, originally constructed in 1968, was recently evaluated for solutions to address equipment obsolescence and condition issues, transmission electrical clearance issues and control room space restrictions. A proposal involving a new 115/13.8-kV substation adjacent to the existing Old Town Substation is expected to be presented to the CSC in 2016. The projected in-service date for the Old Town 115/13.8-kV Substation Rebuild project is December 2019.

Please note that Exhibit 2 includes only those planned transmission projects that UI is responsible to undertake. It does not include any plans or proposed actions by third parties that would require transmission system modifications in UI's service territory. It would be the responsibility of such third parties to provide the CSC with a report of their plans as appropriate. Any such proposed modifications would require notification and coordination with UI so the Company can assess the impacts on its transmission system and ensure the system's continued reliability.

## **Connecticut-Wide and Region-Wide Transmission Issues**

### FERC Order 1000:

As part of the region's efforts to comply with FERC Order 1000 on "Transmission Planning and Cost Allocation," compliance filings were made by ISO-NE and the Participating Transmission Owners Administrative Committee on October 25, 2012 and July 10, 2013 for intra-regional processes (including planning for public policy) and inter-regional planning, respectively. A FERC order on the intra-regional filing was issued May 17, 2013; accepting portions and rejecting others. A subsequent compliance filing addressing the FERC – rejected portions was made on November 15, 2013. On March 19, 2015, FERC issued its order on Rehearing and Compliance in the Order 1000 proceeding. ISO-NE will be required to submit compliance filings associated with FERC Order 1000 prior to or on May 18, 2015 which is the date Order 1000 goes into effect.

### New England Governors' Infrastructure Initiative:

In a public statement published December 6, 2013, the New England Governors announced a commitment to regional cooperation on an energy initiative designed to bring affordable, cleaner and more reliable power to New England. In a letter dated, January 21, 2014, NESCOE requested that ISO-NE provide assistance in support of the announced commitment/initiative. Specific areas of interest included the consideration of upgrades to electric transmission capability to enable delivery of 1200 MW to 3600 MW of clean energy and 1000 mmcf/day (or 600 mmcf/day beyond that announced for the Algonquin Incremental Market (AIM) Project and Connecticut expansion projects) of new natural gas pipeline capacity. NESCOE and the New England states are currently exploring ways to move forward on regional solutions.

## Section III. EXHIBITS

# EXHIBIT 1 System Energy Requirements, Annual Sales, and Peak Load Table

## The United Illuminating Company System Energy Requirements, Annual Sales, and Peak Load

History	Total Sys. Req. <u>(GWh)</u>	Annual Change <u>(Pct.)</u>	Actual Sales <u>(GWh)</u>	Annual Change <u>(Pct.)</u>	Actual System			Normal Weather Adjustment				Extreme Weather Adjustment			
					Peak <u>(MW)</u>	Annual Change	Load Factor <u>(Pct.)</u>	Weather Adjusted Sales <u>(GWh)</u>	Annual Change <u>(Pct.)</u>	Weather Adjusted System Peak <u>(MW)</u>	Annual Change	Load Factor <u>(Pct.)</u>	Weather Adjusted System Peak <u>(MW)</u>	Annual Change	Load Factor <u>(Pct.)</u>
2005	6,360	-	6,106	-	1,346	-	54%	5,995	-	1,405	-	52%	1,489	-	49%
2006	6,149	-3.3%	5,919	-3.1%	1,456	8.2%	48%	5,979	-0.3%	1,430	1.8%	49%	1,521	2.1%	46%
2007	6,119	-0.5%	5,917	0.0%	1,298	-10.9%	54%	5,929	-0.8%	1,365	-4.6%	51%	1,452	-4.5%	48%
2008	5,912	-3.4%	5,729	-3.2%	1,301	0.3%	52%	5,709	-3.7%	1,440	5.5%	47%	1,537	5.9%	44%
2009	5,673	-4.0%	5,493	-4.1%	1,253	-3.7%	52%	5,593	-2.0%	1,272	-11.7%	51%	1,395	-9.2%	46%
2010	5,950	4.9%	5,735	4.4%	1,369	9.2%	50%	5,587	-0.1%	1,244	-2.2%	55%	1,366	-2.1%	50%
2011	5,783	-2.8%	5,576	-2.8%	1,398	2.2%	47%	5,485	-1.8%	1,324	6.5%	50%	1,444	5.7%	46%
2012	5,679	-1.8%	5,431	-2.6%	1,317	-5.8%	49%	5,411	-1.3%	1,315	-0.7%	49%	1,395	-3.4%	46%
2013	5,617	-1.1%	5,422	-0.2%	1,365	3.6%	47%	5,375	-0.7%	1,277	-2.9%	50%	1,384	-0.8%	46%
2014	5,507	-2.0%	5,327	-1.8%	1,186	-13.1%	53%	5,342	-0.6%	1,310	2.6%	48%	1,401	1.2%	45%
<b>2005 - 2014 growth</b>		<b>-13.4%</b>		<b>-12.8%</b>			<b>-11.9%</b>			<b>-10.9%</b>		<b>-6.8%</b>			<b>-5.9%</b>

Forecast	Total Sys. Req. <u>(GWh)</u>	Annual Change <u>(Pct.)</u>	Normal Weather Scenario			Extreme Weather Scenario				
			Weather Adjusted Sales <u>(GWh)</u>	Annual Change <u>(Pct.)</u>	System Peak <u>(MW)</u>	Annual Change	Load Factor <u>(Pct.)</u>	System Peak <u>(MW)</u>	Annual Change	Load Factor <u>(Pct.)</u>
2015	5,598	1.6%	5,326	-0.3%	1,341	2.4%	48%	1,432	2.2%	45%
2016	5,563	-0.6%	5,293	-0.6%	1,370	2.1%	46%	1,460	2.0%	43%
2017	5,487	-1.4%	5,221	-1.4%	1,388	1.3%	45%	1,479	1.2%	42%
2018	5,446	-0.7%	5,182	-0.7%	1,402	1.0%	44%	1,493	1.0%	42%
2019	5,436	-0.2%	5,172	-0.2%	1,409	0.5%	44%	1,500	0.5%	41%
2020	5,458	0.4%	5,193	0.4%	1,416	0.5%	44%	1,507	0.5%	41%
2021	5,448	-0.2%	5,184	-0.2%	1,426	0.7%	44%	1,517	0.7%	41%
2022	5,458	0.2%	5,193	0.2%	1,438	0.8%	43%	1,529	0.8%	41%
2023	5,468	0.2%	5,203	0.2%	1,442	0.3%	43%	1,533	0.3%	41%
2024	5,498	0.5%	5,231	0.5%	1,445	0.2%	43%	1,536	0.2%	41%
<b>2014 - 2024 growth</b>		<b>-0.2%</b>			<b>-2.1%</b>		<b>10.3%</b>			<b>9.7%</b>
<b>Compounded Annual Growth Rate (2014 - 2024)</b>		<b>-0.02%</b>			<b>-0.21%</b>		<b>0.99%</b>			<b>0.93%</b>

1. System Requirements are sales plus losses and Company use.
2. Load Factor = System Requirements (MWh) / (8760 Hours X System Peak (MW)).
3. All forecasts include C&LM, DG & potential new large customer planned loads identified by UI Economic Development.

## **EXHIBIT 2 Transmission System Planned Modifications**

### **Report to the Connecticut Siting Council**

**List of Planned Transmission Projects for which Certificate Applications are being contemplated, may be subject to Declaratory Ruling, or have already been filed**

<b>Projects for which Certificate Applications are being Contemplated</b>	<b>kV</b>	<b>Date of Completion</b>
1. Hawthorne 115-kV Capacitor Bank Additions Project	115	2016
2. Housatonic River Crossing Project	115	2016
3. Baird 115/13.8 kV-Substation Rebuild Project	115	2017
4. Mix Avenue 115-kV Substation Modification Project	115	2017
5. Ansonia 115-kV Capacitor Bank Additions Project	115	2017
6. Pootatuck 115-kV Substation Modification Project	115	2017
7. Bridgeport-Stratford 115-kV Railroad Lines Upgrade Project	115	2018
8. Old Town 115/13.8-kV Substation Rebuild Project	115	2019
9. Baird-Housatonic River 115-kV Railroad Lines Upgrade Project	115	2019
<b>Projects which have Received CSC Declaratory Approval</b>		
1. Sackett 115/13.8-kV Substation Control House Replacement Project	115	2015
2. NERC FAC-008 Compliance Program	115	2016
3. Milford 115-kV Railroad Lines Upgrade Project	115	2016
<b>Projects which have Received CSC Certificate of Environmental Compatibility and Public Need Approval</b>		
1. Installation of a new 115/13.8-kV Pootatuck substation in Shelton	115	2015