

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

**March 1, 2012**

**The United Illuminating Company**  
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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 municipalities, 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, means the data provides a 50% confidence, from a statistical perspective, that forecasted normal weather-adjusted system peak will be exceeded 50% of the time on the peak load day, due to weather conditions. Extreme weather, also referred to as a 90/10 forecast, means the data provides a 90% confidence, from a statistical perspective, that the forecasted extreme weather-adjusted system peak will be exceeded only 10% of the time 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 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 Base Load Forecast reflects the forecasted peak load resulting from UI's existing levels of C&LM, DG and existing base of customers. 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 impact due to incremental 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 2002 and 2011, UI has experienced a decline in normal weather-adjusted sales (-3.5% sales growth) as compared to a simultaneous increase in its normal weather-adjusted peak load (+1.0% peak load growth). This is attributed to changes in customer behavior regarding energy usage, the recession along with an increase in air-conditioning loads. It should be noted that in four of the last ten years of historical data (2002, 2006, 2010, and 2011), 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 9.9% between 2011 and 2021. However, the forecast of sales projects a growth of only 6.7% during the same period because incremental C&LM counteracts a portion of the incremental sales increases of the existing customer base and new customers. This year's Sales Forecast is higher than last year's due to a combination of drivers. These include a projected stronger economic recovery and a reduction in the future impact of DG within the forecast. The normal weather-Adjusted Peak Load Forecast is lower than last year's forecast (53 MW lower in year 2020).

## **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 2002 to 2011 historical data in Exhibit 1 shows growth in both the extreme weather-adjusted historical Peak Loads (+5.1% growth) and the historical normal weather-adjusted Peak +1.0% growth. The Company's extreme weather-adjusted Peak Load Forecast shows a growth of 13.3% during the period from 2011 to 2021. This forecasted growth is less than last year's due to the continued impacts of the economic recession in the short term. The extreme weather-Adjusted Peak Load Forecast percentage growth is lower for this year's forecast than last year's forecast (for the full ten-year period of the respective forecast). The forecasted extreme weather peak in year 2020 is 69 MW lower than last year's forecast due to the economic impact on the short term forecast peak load and the actual 2011 peak load.

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<sup>1</sup>.

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<sup>1</sup> 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.

## UI Peak Load Scenario for ISO-NE Regional Transmission Planning

The Company has also developed a forecast of peak loads that is comparable to the assumptions used in the development of the Independent System Operator-New England (“ISO-NE”) Capacity, Energy, Loads and Transmission (“CELT”) peak load forecast and is provided for informational purposes in Exhibit 2. This Peak Load Scenario excludes all C&LM, DG and potential new large customer loads in order to be consistent with the ISO-NE treatment of loads and resources in their regional planning.

## **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 has so far successfully added about 36 Megawatts of DG capacity in the UI service territory.

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 as well as a three year pilot program for anaerobic digestion projects to generate electricity and heat. The PA 11-80 DG grant 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. UI will continue to monitor the development of the DG pilot program established through PA 11-80.

Grants approved through the PA 05-01 DG program totaling 8.5 Megawatts<sup>2</sup> of capacity are awaiting a customer decision that must occur before the three-year timeframe runs out in June, 2012. Some uncertainty exists regarding the ultimate outcome of these projects and any new projects potentially submitted after the Department of Energy and Environmental Protection (“DEEP”) re-energizes the program. Even with the grants made available, each customer must decide for themselves, within the timeframe allotted, whether the installation is economically attractive. Because many of the best DG opportunities have been installed, the monetary grants

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<sup>2</sup> Operational DG output is based on capacity listed on grant application and not the actual generator output.

offered through the new program are not expected to create a significant increase in the installed base of DG.

In development of the sales forecast shown in Exhibit 1, those projects no longer anticipated have been excluded from the sales forecast and an 85% capacity factor was utilized for forecasted units. The incremental annual impact of DG to the sales forecast is 53.4 GWh in 2012 and none in any subsequent years.

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). Regarding forecasted units, one project entered service on October 1, 2011 (10.4 MW), and an additional 4.4 MW are forecasted for 2012 representing 50% of the total capacity of the forecasted projects for the year. The incremental reduction in system peak load forecast due to DG is projected to be 14.8 MW in 2012 and none in subsequent years.

## **Conservation & Load Management**

The C&LM 2012 programs continue to experience enthusiastic participation in response to UI's commitment to maximize the benefits our customers receive from every dollar spent. The existing 3 mill Combined Public Benefits Charge provides most of the funding for the C&LM programs. Additionally, the Electric Distribution Companies ("EDCs") actively pursue and secure additional sources of program dollars, including the Regional Greenhouse Gas Initiative ("RGGI"), the ISO-NE Forward Capacity Market ("FCM"), the Connecticut Class III Renewable Energy Credits ("RECs") program, and grants such as a two year \$3 million grant from the U.S. Department of Energy ("DOE"). In a time of economic uncertainty, the 2012 C&LM Programs further expand UI's solid record of delivering value, showcasing new technologies, and cultivating positive relationships with communities (including the financial community), leading to the explosion of the energy efficiency and conservation market.

Among other additional funding sources, The American Recovery and Reinvestment Act of 2009 ("Stimulus Act" or "ARRA") has provided recently Connecticut with a significant increase in resources for energy efficiency. In 2009 UI received \$2.3 million from the Stimulus Act and allocated it towards the Home Energy Solutions, Energy Opportunities and Small Business programs. The State of Connecticut also received an additional \$3.4 million for an appliance rebate program. While there is no additional funding from ARRA included as part of the current load forecast, an additional federal grant in the amount of \$3 million over two years was awarded through the DOE Weatherization Innovation Pilot Program ("WIPP").

Funds from the Regional Greenhouse Gas Initiative ("RGGI") and Class III RECs remain to augment the three-mill Public Benefits Charge on customers' electric bills. RGGI is the first mandatory, market-based effort in the United State 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 Forward Capacity Market (“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 into the transition period FCM on behalf of the Connecticut Energy Efficiency Fund and has successfully bid capacity in the first five capacity auctions, with a sixth auction scheduled for April, 2012. In addition, UI is an active demand response provider with over 70 MW of capacity currently enrolled.

In response to a request from DEEP and in support of Governor Malloy’s energy efficiency goals, the EDCs prepared an “Increased Savings” scenario (for the year 2012 only) in addition to the business-as-usual “Base Budget” projections in the 2012 C&LM plan. This scenario results in more than doubling both the annual savings and the associated budget. Although the amount of funding required has been identified, the source of that funding has not been established. Pending approval of this major expansion of the energy efficiency programs,

the increased level will put 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.

PA 11-80 also 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 ("IRP") 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") that goes above and beyond the base level DSM (business as usual) strategy presented in the 2012 C&LM Plan. 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>3</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.

Both the 2012 C&LM Plan and the 2012 IRP are undergoing regulatory review. The immediate result of the higher scenarios may, at minimum, stimulate increased program activity and associated benefits earlier in the year. On the other hand, approval and successful implementation of the "Increased Savings" C&LM Budget could potentially double the energy savings compared to the base forecast used in the development of the sales and peak load forecasts presented in Exhibit 1. The 2012 Proposed Base Budget was reviewed under PURA Docket No. 12-02-01, *PURA Review of the Connecticut Energy Efficiency Fund's Electric Conservation and Load Management Plan for 2012*, and received DEEP approval on February 17, 2012. The Increased Savings Budget will be reviewed under a different proceeding than the Base budget, but could be approved as early as June, 2012.

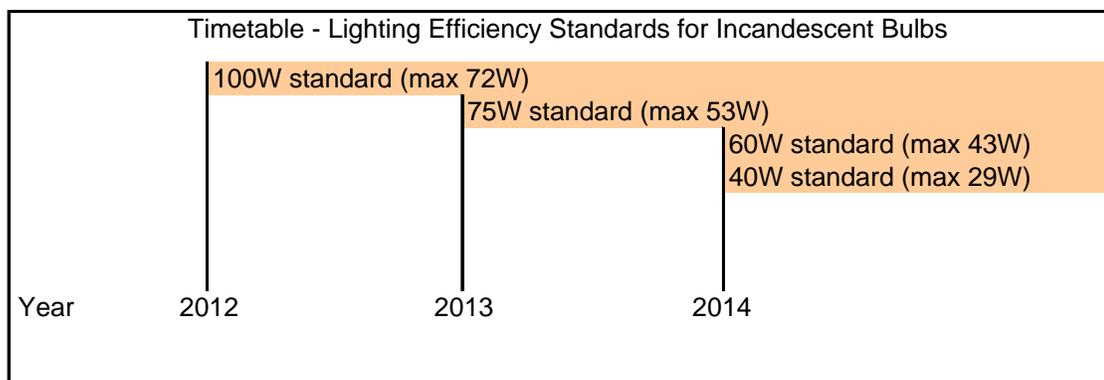
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<sup>3</sup> In 2010 the ECMB changed its name to the Energy Efficiency Board ("EEB").

Legislation has effected substantial change to the lighting portion of C&LM programs. Beginning in 2012, pursuant to the Energy Independence and Security Act of 2007, nationwide lighting efficiency standards (“Lighting Efficiency Standards”) will be implemented. The purpose of the Lighting Efficiency Standards is to introduce minimum energy performance standards for General Service incandescent bulbs that will, over a period of time, remove inefficient lighting products from the marketplace. The timetable for compliance is set forth below. Incandescent bulbs will be available in 2012 and beyond if they meet the Lighting Efficiency Standards guidelines. Non-standard bulbs will likewise not be affected by the 2012-2014 standards.

The phase-in of the federal standards means that a third of the annual savings for general service Compact Fluorescent Light bulbs (“CFLs”) will be not be attributable to the C&LM programs. As lighting makes up a significant portion of the program offerings and savings in every sector, particularly concerning CFLs 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 continues to investigate non-CFL technologies that achieve savings beyond the standard such as LED or induction lighting. 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.

Table 1 – Lighting Efficiency Standards for Incandescent Bulbs Timetable



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 DG, 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 on a level playing field with new generation. UI has entered peak demand savings from energy efficiency and load management projects into the transition period FCM on behalf of the Connecticut Energy Efficiency Fund and has successfully bid capacity in the first four capacity auctions. In addition, UI is an active demand response provider with over 70 MW of capacity currently enrolled.

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

EEB, 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.

Table 2 illustrates the incremental impact of C&LM programs to the sales forecast, and Table 3 shows the incremental annual impact of C&LM to the peak load forecast.

Table 2 – Incremental Annual Impact of C&LM to Sales Forecast

Year	Reduction in Energy Sales due to C&LM (GW-h)
2012	44.3
2013	42.4
2014	41.9
2015	40.8
2016	40.0
2017	38.8
2018	37.5
2019	34.2
2020	35.5
2021	35.7

Table 3 – Incremental Annual Impact of C&LM to Peak Load Forecast

Year	Reduction in System Peak Load Forecast due to C&LM (MW <sup>4</sup> )
2012	5.7
2013	5.5
2014	5.4
2015	5.4
2016	5.3
2017	5.2
2018	5.1
2019	4.8
2020	5.0
2021	5.0

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<sup>4</sup> Values represent estimated customer metered values. For UI's system load these reductions were 'grossed-up' using the system loss factor.

## **Section II. Transmission Planning**

The 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.

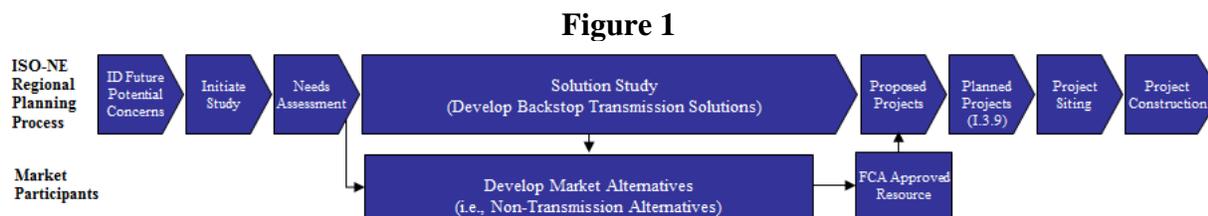
### Transmission Planning – National and Regional Reliability Standards

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, and 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 3. 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 Declaratory Rulings from the

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

- East Shore 115-kV Capacitor Bank Transient Recovery Voltage (“TRV”) Project – completed March 2011.
- Devon Tie Devon Tie 115-kV Switching Station Bulk Power System (“BPS”) Compliance Project – completed November 2011.
- 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 is expected to complete the 26.4-kV substation portion of the project by December 2012.
- Grand Avenue 115-kV Switching Station Modernization Project – In 2009, the Council also issued a Declaratory Ruling regarding UI’s proposed Grand Avenue 115-kV Switching Station Modernization Project, which addresses reliability compliance issues in the greater New Haven area. The project is expected to be in service by May 2012.
- East Shore 115/13.8-kV Substation Capacity Upgrade Project - In 2011, the Council issued a Declaratory Ruling for the project which is an upgrade to the existing 115/13.8-kV East Shore Substation needed to address distribution substation capacity and voltage related concerns in the greater New Haven area. UI anticipates completing this project in 2013.
- East Shore 115-kV Switching Station Modernization Project – the Council issued a Declaratory Ruling in 2010 for the project, which addresses aging infrastructure and short circuit issues at East Shore 115 kV Substation in New Haven. The project is expected to be in service by 2013.

- 8300 Line Reconfiguration Project – Also in 2011, UI made a filing to the CSC and received a Declaratory Ruling regarding the Grand Avenue 8300 115-kV Line Reconfiguration project, which addresses several transmission line thermal overloads in the greater New Haven area. The in service date of this project is expected to be mid-2013.

#### Other Identified Reliability Concerns

The Shelton 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. UI anticipates making a filing with the Council for this project in 2012, which is projected to be in service in 2014.

UI, along with ISO-NE and CL&P, completed a long term (2018) reliability Needs Assessment of the Southwest Connecticut (SWCT) area in 2011. PAC has been updated several times in 2010 and 2011 regarding the findings associated with this ISO-NE SWCT Needs Assessment. This assessment's objective is 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 July 13, 2011, which is posted on the ISO-NE website along with other 2011 PAC reports at:

[http://www.iso-ne.com/committees/comm\\_wkgrps/prtcpnts\\_comm/pac/reports/index.html](http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/reports/index.html)

An active second study, the ISO-NE SWCT Area Transmission Solution Study, commenced in 2011 to develop and analyze transmission solutions to address the needs identified in the 2011 SWCT Needs Assessment. UI anticipates additional filings to CSC in 2012 and 2013 based on the preferred solutions/projects resulting from this study

Prior SWCT related projects contemplated by UI, namely the Naugatuck Valley 115-kV Reliability Improvement Project and the Pequonnock 115-kV Fault Duty Mitigation Project, remain listed in Exhibit 3, “Transmission System Planned Modifications,” and will be updated in subsequent filings based on the results of the ISO-NE SWCT Area Transmission Solution Study.

Please note that Exhibit 3 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

On January 17, 2012, DEEP published the Draft 2012 Integrated Resource Plan (“IRP”) for Connecticut. Appendix G of the 2012 IRP addresses needs and studies in Connecticut such as the SWCT Solution Study, the Greater Hartford Central Connecticut Needs Assessment and discusses the consideration of Non-Transmission Alternatives (“NTA”). The 2012 IRP indicates that Connecticut intends to “engage in the creation of a region-wide NTA process.” The 2012 IRP suggests Connecticut will support the development of the recently announced conceptual

ISO-NE NTA process. This process is part of ISO-NE's Strategic Planning Process, which is described in an ISO-NE October 27, 2011 whitepaper.

The following are New England region-wide risks identified by ISO-NE and various stakeholders in 2010 and 2011:

- Resource performance and flexibility.
- Increased reliance on natural gas generation.
- Potential retirement of generation.
- Integration of greater levels of variable intermittent resources (i.e. wind).
- Alignment of markets with Transmission Planning.

In a presentation given at the NEPOOL Participants Committee on February 10, 2012, ISO-NE revealed its business priorities for 2012 and included a presentation on the “strategic initiatives” which outlined work to date and planned work for 2012 related to the topics listed above.

### Public Policy Issues

As part of the region's efforts to comply with FERC Order 1000 on, “Transmission Planning and Cost Allocation,” the New England States Committee on Electricity (“NESCOE”) put forth their “New England States’ Preferred Framework – Order 1000 Public Policy Projects for Discussion.” The document is available via the following link:

[http://www.nescoe.com/uploads/Order\\_1000\\_Framework\\_Jan\\_12\\_2012.pdf](http://www.nescoe.com/uploads/Order_1000_Framework_Jan_12_2012.pdf)

NESCOE proposes that ISO-NE allocate to NESCOE not less than one “Public Policy Study” not less than once every two years to enable analysis of the potential implications and regulation requirements and/or public policy targets that states collectively identify. NESCOE shall make the determination of which transmission needs driven by public policy requests ISO-

NE will analyze. Upon completion of the study, NESCOE may direct ISO-NE to perform more detailed transmission studies.

The proposal goes on to outline treatment of projects with multiple benefits (i.e.: reliability, market efficiencies, public policy), controls, commitments, approvals, inclusion in the RSP and cost recovery.

## 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	Year	Total Sys. Req. (GWh)	Annual Change (Pct.)	Actual Sales (GWh)	Annual Change (Pct.)	Actual System Peak (MW)	Annual Change (Pct.)	Load Factor (Pct.)	Normal Weather Adjustment				Extreme Weather Adjustment			
									Weather Adjusted Sales (GWh)	Annual Change (Pct.)	Weather Adjusted System Peak (MW)	Annual Change (Pct.)	Weather Adjusted System Peak (MW)	Annual Change (Pct.)	Weather Adjusted System Peak (MW)	Annual Change (Pct.)
2001	6,010	-	5,724	-	1,324	-	52%	5,689	-	1,259	-	55%	1,322	-	52%	
2002	6,051	0.7%	5,781	1.0%	1,310	-1.1%	53%	5,684	-0.1%	1,259	0.0%	55%	1,318	-0.2%	52%	
2003	6,071	0.3%	5,763	-0.3%	1,281	-2.2%	54%	5,716	0.6%	1,285	2.0%	54%	1,351	2.5%	51%	
2004	6,205	2.2%	5,952	3.3%	1,201	-6.3%	59%	5,952	4.1%	1,300	1.2%	54%	1,364	0.9%	52%	
2005	6,360	2.5%	6,106	2.6%	1,346	12.1%	54%	5,995	0.7%	1,353	4.0%	54%	1,428	4.7%	51%	
2006	6,149	-3.3%	5,919	-3.1%	1,456	8.2%	48%	5,979	-0.3%	1,377	1.8%	51%	1,456	2.0%	48%	
2007	6,119	-0.5%	5,917	0.0%	1,298	-10.9%	54%	5,929	-0.8%	1,389	0.8%	50%	1,464	0.6%	48%	
2008	5,912	-3.4%	5,729	-3.2%	1,301	0.3%	52%	5,709	-3.7%	1,379	-0.7%	49%	1,467	0.2%	46%	
2009	5,673	-4.0%	5,493	-4.1%	1,253	-3.7%	52%	5,593	-2.0%	1,280	-7.2%	51%	1,395	-4.9%	46%	
2010	5,950	4.9%	5,735	4.4%	1,365	8.9%	50%	5,587	-0.1%	1,252	-2.2%	54%	1,366	-2.1%	50%	
2011	5,783	-2.8%	5,576	-2.8%	1,401	2.6%	47%	5,485	-1.8%	1,272	1.6%	52%	1,386	1.5%	48%	
2001 - 2011 growth			-3.8%		-2.6%		5.8%			-3.6%		1.1%			4.9%	
2002 - 2011 growth			-4.4%		-3.5%		7.0%			-3.5%		1.0%			5.1%	

Forecast	Year	Total Sys. Req. (GWh)	Annual Change (Pct.)	Normal Weather Scenario				Extreme Weather Scenario			
				Weather Adjusted Sales (GWh)	Annual Change (Pct.)	System Peak (MW)	Annual Change (Pct.)	System Peak (MW)	Annual Change (Pct.)	System Peak (MW)	Annual Change (Pct.)
2012	5,779	-0.1%	5,498	0.2%	1,278	0.5%	52%	1,379	-0.5%	48%	
2013	5,785	0.1%	5,505	0.1%	1,318	3.1%	50%	1,421	3.0%	46%	
2014	5,830	0.8%	5,547	0.8%	1,347	2.2%	49%	1,460	2.7%	46%	
2015	5,875	0.8%	5,590	0.8%	1,370	1.7%	49%	1,492	2.2%	45%	
2016	5,938	1.1%	5,650	1.1%	1,384	1.0%	49%	1,514	1.5%	45%	
2017	5,967	0.5%	5,678	0.5%	1,385	0.1%	49%	1,523	0.6%	45%	
2018	6,014	0.8%	5,722	0.8%	1,386	0.0%	50%	1,532	0.6%	45%	
2019	6,059	0.8%	5,765	0.8%	1,388	0.1%	50%	1,542	0.7%	45%	
2020	6,123	1.0%	5,826	1.0%	1,392	0.3%	50%	1,555	0.9%	45%	
2021	6,152	0.5%	5,854	0.5%	1,397	0.4%	50%	1,570	1.0%	45%	
2011 - 2021 growth			6.4%		6.7%		9.9%		13.3%		

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 Peak Load Scenario for ISO-NE Regional Planning Process

### The United Illuminating Company

#### Peak Load Scenario Comparable to ISO-NE's CELT Forecast Assumptions (Final forecasts to be provided to ISO-NE)

#### Forecast

<u>Year</u>	<u>Normal Weather Scenario</u>		<u>Extreme Weather Scenario</u>	
	System Peak <u>(MW)</u>	Annual <u>Change</u>	System Peak <u>(MW)</u>	Annual <u>Change</u>
2012	1,272	0.0%	1,373	-1.0%
2013	1,296	1.9%	1,399	1.9%
2014	1,325	2.2%	1,437	2.7%
2015	1,348	1.8%	1,470	2.3%
2016	1,363	1.1%	1,493	1.6%
2017	1,370	0.5%	1,508	1.0%
2018	1,375	0.4%	1,521	0.9%
2019	1,382	0.5%	1,537	1.0%
2020	1,392	0.7%	1,555	1.2%
2021	1,403	0.8%	1,575	1.3%
	2011 - 2021 growth		10.3%	13.6%

- All forecasts exclude C&LM, DG & potential new large customer planned loads identified by UI's Economic Development Department, consistent with ISO-NE CELT load forecasting methodology.

## **EXHIBIT 3 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. Installation of a new 115/13.8-kV substation in Shelton	115	2014
2. Naugatuck Valley 115-kV Reliability Improvement Project	115	2014
3. Pequonnock 115-kV Fault Duty Mitigation Project	115	2015

<b>Projects which have Received CSC Declaratory Ruling Approval</b>	<b>kV</b>	<b>Date of Completion</b>
1. Grand Avenue 115-kV Switching Station Modernization Project	115	2012
2. East Shore 115/13.8-kV Substation Capacity Upgrade Project	115	2013
3. East Shore 115-kV Switching Station Modernization Project	115	2013
4. 8300 115-kV Line Reconfiguration Project	115	2013