



PLEASE QUOTE OUR REF:

October 26, 2011

**Private and Confidential**

Mr. Michael Leverock  
Chairman  
The Energy Commission  
Ministry of Energy, Telecommunications and E-Commerce  
F.B. Perry Building, 2<sup>nd</sup> Floor  
40 Church Street  
Hamilton HM 12

Dear Sirs,

In accordance with Section 12(1) of the Energy Act, 2009 we hereby give notice and make application for an overall minimum increase in our average basic rates of 4.3%, 3.9% and 4.1% respectively per annum for the next three years.

In preparing this request we have been very conscious of the areas you must consider in your deliberations as detailed in Part 3 Section 13(2) of the Energy Act 2009. To this end, we have attempted to supply you with information which will allow you to consider:

***(a) "the public interest"***

This is in accordance with our mission statement which is "To provide a secure, reliable and sustainable electric power system for the people of Bermuda."

***(b) "the cost to the specified business of the specified commodity"***

Within the section, Electric System Integrated Resource Planning, we detail our plans for the future driven by replacement and growth in the areas of Generation, Transmission and Distribution, Human Resource development and Renewables. This will reveal an understanding of why an increase in rates, as proposed, is necessary. As part of our submission we have included for the Commission's reference a copy of our future planning document.

***(c) "the needs of the specified business for adequate working capital and reasonable reserves"***

Within the sections, Historical Financial Review, Financial Projections and the Cost of Service Study, we identify our needs for adequate working capital and reasonable reserves to enable us to continue to serve our customers with the same level of reliability and service they have come to expect.

***(d) "the need to afford investors a reasonable return on their investment"***

The sections Comparative Rates of Return and the Cost of Service Study also detail what returns we have been afforded in the past and how these have been declining over the years and as a rule are lower compared to overseas utilities.

We consider the public interest and we have, as detailed in the Financial Review section, tried to ensure that, over the long term, our rate increases are kept within the bounds of increases in the Consumer Price Index (CPI). We also believe as detailed in the final section of our submission that our rates continue to be comparable with other island jurisdictions which face similar issues of remote location and large reliance on fossil fuel generation options. You will also note in the Electric System Planning section that we believe the fuel savings afforded by the higher efficiency of the new plant will impact positively the overall or total cost to the consumer.

We are seeking approval for increases over the next three years which will essentially take us through to the next phase of physical plant addition which, as you will be aware is scheduled for commissioning in the summer of 2013. While we have planned extensively for the future in terms of plant needs and the need to incorporate renewable technology, both large scale and small scale, we believe at this juncture, with the recent release of the Government's White Paper and its desire to exceed our proposed use of these renewable technologies, as well as their desire to drastically reduce the carbon emissions on the Island, any request for increases beyond the dates proposed would be premature. We do not know what will be forthcoming from the debates on the White Paper nor do we know what new technologies or sources of fuel will be available. We do have a reasonable position with respect to fuel options and are presently exploring these with Government. However, at this date, we have no concrete solutions hence the shorter time frame than previously for the requested rate increases. Regardless of the outcome of the debate over new technologies and sources of fuel, this next phase of physical plant additions over the forthcoming three years is imperative and even though it is a least cost solution considering the risks of the alternatives, it does require an increase in rates.

We do know that our plans will require some \$440 million to be spent over the next 10 years. This capital requirement is unheard of in our history and is in large part driven by the need to replace aging plant. The requirement is not unique in the electric utility industry. The industry in North America is in the same predicament. See Appendix 1 for charts detailing comparative spend by North American utilities. The only way to fund this present replacement program is through rate increases and cost containment efforts.

During the period between 1996 and 2005, we successfully financed our operations and required capital expansion from income growth and cost containment efforts, and thereby avoided any form of rate increase. Between 2005 and 2007 we increased rates by a minimal 1.5% per annum when the average CPI over this period was 3.1 % per annum. During the period of 2008 through 2010 we increased rates by an average of 3% when average CPI was 3.5%. In 2011 the Company took the unprecedented step not to increase rates as we realized that the economic environment could not sustain it. We have made significant strides in the cost containment area where we have taken steps to review our pension plan, retire 26 of our employees early and made efforts throughout the organization to contain costs, and simply do more with less. Unfortunately, we have now reached the point where we must increase rates in order to ensure we have a sound financial base which will allow us to support the financing costs resulting from the proposed capital replacement program and continue to provide Bermudians with the reliability and service that they expect.

We continue to realize that there is a dependency on us to supply a secure and reliable electric system. It is clearly indicated in the White Paper that we will be expected to provide the majority of supply and the backup for renewables and alternative generation for the Island in the future. The only way this can be achieved is for this organization to be afforded the means to fund the capital requirements that are needed to sustain our plant in order to be able to continue to supply reliable power. We have used our best efforts to design a low risk plan, which controls costs while maintaining customer expected reliability, and still maintains the flexibility to adapt to meet the future needs of the Island. However, implementation is dependent on the ability to fund these needs. This in turn is dependent on future revenues which investors can rely upon, and these will only be achieved, if this rate application is approved.

*“The cost to the specified business of the specified commodity”*

### **Electric System Integrated Resource Planning**

The Commission is likely aware that some five years ago BELCO undertook a major initiative to discuss and determine a plan for Electric Energy Supply for the Island over the next 20 years. A comprehensive discussion document was prepared and shared with all possible interested parties to obtain their input, ideas and alternatives to the Central Plant concept that has served Bermuda for the last 100 years. Stakeholders in Government, the Opposition, Government Departments, Environmental groups, National Interest groups and a variety of other interested parties were presented to, provided copies of the document and invited to give us feedback and direction. Topics considered were distributed generation, large-scale and small-scale renewables and Central Plant options, under-grounding, efficiency standards and international trends.

Since that time, based on the feedback we received, we adjusted our plan slightly to allow for time to consider alternatives such as renewable technology options. To allow time for this discussion we brought forward Phase II of our original plan and installed three 4.5 MW Gas Turbines. This time in turn afforded us the opportunity to issue a Solicitation of Interest for large scale renewable alternatives to be considered as future options for the Island. In engaging with these potential suppliers of large scale renewable options, we were able to revisit the thinking in our original plan. As a result, we now include sources of renewable energy as a large part of our future plant mix. We have prepared a plan which we believe will sustain the Island’s needs going forward in the most economical and reliable manner. This revised plan has also been shared with numerous stakeholders noted above, specifically as we sought to share with them our plans as we applied for permissions to begin the deferred Phase I of our original plan. We are pleased to say that permissions have been granted for the North Power Station build as there is a realization that this plant is an absolute requirement in order to allow us to continue to meet the electricity demands of this Island. Our plan includes Central Plant expansion as well as large scale renewables into 2020. Our plan fits with the general philosophy and direction of the Department of Energy, and we will work with the Department to refine it as the options to the Island become more evident. We have included it in Appendix 2 for your review.

Unless we add new plant to our system by 2013 the power system on the Island will be seriously compromised. We will no longer have adequate capacity, nor will we have capacity for reliable redundancy which will certainly compromise both security and reliability in our generation and transmission systems. It is therefore imperative that we receive the requested price increases to finance these capital requirements.

## **Generation Plant**

We continue to engage Mott MacDonald Pettit, a leading UK engineering firm which has been used by the Company in previous plant expansions, to undertake a comprehensive review of the best planting scenarios for our Pembroke site. These reviews consider issues concerning the site and location, different engine types and configurations, and optimum sizing of engines to give best overall Net Present Values, reduced plant reserve margins, reduce spinning reserve and resultant load shedding probabilities, maximizing production efficiency, consequential environmental impacts, and added site risks associated with construction and operation of new and existing plant on this site as well as the impact of the addition of large scale renewables on our plant mix.

However, the biggest driver of this plant scenario is now the need to consider the replacement of old and aging plant which has reached the end of its useful operating life.

We have seen stagnation in our sales of kWh's essentially since 2007. However, there has been a continued increase in demand. This projection in demand also factors into our planning requirement for additional engines. Through 2020 there will be a need to install at least eight new engines in order to maintain enough capacity to replace older, retiring engines and supply the current load – more should the load grow. Please see Appendix 3 which illustrates the timing of these engines installations. This is the most critical part of our long term planning. We have factored into this mix the need to ensure large scale renewables are considered as noted below. However, they do not negate the need for us to have base load plant available to supply electricity as and when these forms of generation are not available. Large scale storage devices of electricity are not available at this time and, therefore, we must maintain a level of redundant capacity in order to maintain the reliable levels of generation we have achieved to date.

The total anticipated cost for this plant expansion through 2020 is approximately \$197 million. These costs have been based on past experiences and adjusted for anticipated inflation and exchange impacts as they are known today. The present Net Asset Value for all BELCO assets is \$307 million. As such in the next 10 years BELCO intends on spending approximately two-thirds of the total value of the assets it presently has on hand on generating capacity alone. Please see Appendix 3 for a summary of costs for this plant expansion. It should be noted that these costs do not include the cost of large scale renewable generation. As it is still to be decided who will build these units, we have not included them in our cost estimates.

## **Renewables**

Despite our best efforts to find large scale renewable generation alternatives, none have been identified to date. Our Integrated Resource Plan calls for the addition of large scale solar photovoltaic and large scale offshore wind farms as part of our generation mix. However, we have not included these costs in our capital cost projection model. Costs to fund these significant projects are still very much unknown based on the market to date. These costs would include site surveys, engineering and environmental studies, and

processing approvals, yet to be determined. In addition, until further clarification is received from Government regarding our involvement in this area of generation, we have concentrated our efforts on ensuring redundant capacity is available. We will however, work with all parties involved to ensure suitable interconnect agreements are available as necessary including pricing and Power Purchase Agreements are in place when the developments occur.

The Commission will also recognize that we have instituted an interconnection agreement for those of our customers who have pursued the addition of small scale renewable technologies. Some 34 customers are presently taking advantage of the opportunity to sell excess kWh's they generate from their system back to our grid, with six more pending at the time of writing. Shortly, we intend on releasing interconnection agreements for larger scale renewable facilities.

These renewable technologies will have an impact on our sales to these customers. For the purposes of our financial planning we have incorporated these sales losses into our projections, and reduced our sales to residential and commercial customers accordingly.

In addition to the above, BELCO will continue to promote the concept of energy efficiency. The Company will continue to strive to encourage and inform customers of ways that they can achieve greater energy efficiency through reduction in wastage, purchasing energy efficient appliances and products, and incorporating energy efficiency into buildings plans.

### **Transmission and Distribution Plant**

During the next three years in particular, BELCO will also be challenged with both replacement and the need to increase the capacity of a transmission and distribution network that will increasingly become less secure and reliable. Existing plant is stressed from growth in demand due to new construction and increased load, as well as age. BELCO and the Island have had the luxury of relying on the forward thinking and planning completed in previous years. However, we are reaching the stage where again this plant is aging and the reliability of it is diminishing to the point that the economic viability of continuing to repair and maintain it is being questioned. To this end, the next three years will see the addition of a new submarine cable to the East End of the Island to ensure redundancy, as well as the replacement of the aging submarine cable feeding the West End via Dockyard, and the replacement of critical transmission cables to our core Flatts Substation which owing to age, are failing at an ever increasing rate.

We will also need to upgrade our substation capacities in the City of Hamilton as several of these are aging and reaching maximum capacity. We will also be replacing our Prospect Substation as it too has reached maximum capacity, and the new load requirements of the National Stadium complex cannot be fulfilled by the current facility.

BELCO has always maintained a core infrastructure that accommodates the growth of power throughout the Island, regardless of whether it is an extension to a single-family home or a major commercial development. The 99% under-grounded transmission

network requires significant investment to continue the exceptional reliability afforded by redundancy built into the cabling and transformer infrastructure.

The distribution network is currently 55% under-ground. There continues to be a need for significant investment required to refurbish and enhance the overhead infrastructure and continue targeted under-grounding of lines to improve the service to those groups of customers most affected by outages on the worst-performing lines. The standards of design and construction would also be changed to accommodate new technologies where they effectively reduce the number and duration of outages on the distribution network.

The costs of these developments have been identified and are included in our financial projections through 2017. Through this date we anticipate spending approximately \$147 million with the majority incurred in the years 2012 through 2014. Please see Appendix 4 for a summary of the costs and additions proposed through 2020.

### **Human Resources**

Annual increases in labor costs, one of the largest components of our cost base, include expenses for recruitment, skill-based education, technical training, and development. BELCO is a specialized industrial entity, and as such requires considerable investment in recruitment and training of Bermudians in order to ensure adequate expertise at all skill levels for present and future needs. This includes a comprehensive Apprenticeship Program requiring a four-year commitment to training and study and a further five years of specific coaching and mentoring by tradesmen of a higher grade. Currently, 16 apprentices are enrolled in the program with three additional candidates anticipated to join the program in January. We also provide an Engineer-in-Training program and over the past 16 years have seen nine Bermudian engineers employed through the program with four currently enrolled. We also support continuous technical upgrading of skills and knowledge, and development opportunities for Bermudians in our Company to ensure advancement and succession.

This training, along with advances in technology, has allowed us to increase the efficiency and effectiveness of our people. We continue to look for ways to do more with less. To this end, we recently challenged ourselves to reduce our head count to save costs as a means of helping sustain the economic viability of our business. Consequently, in July of 2011, we offered early retirement to 31 eligible longer serving employees of which 26 accepted. While this resulted in additional costs in 2011 the savings in future years will be significant. In addition, we have taken steps to minimize the impact of "legacy" costs on the organization. To this end, we have frozen our Defined Benefit Pension Plan and, effective January 1, 2012, will move all employees to a Defined Contribution Plan. This will allow us to fix our pension expense into the future and reduce the overall costs to the organization and ultimately our customers.

## **Fuel Costs**

Fuel costs continue to be an issue for the Company as well as the Country. We will continue to invest in plant that is more efficient and produces the highest output per barrel of fuel that we can achieve. However, the base cost of the fuel on world markets continues to be volatile. We have tendered our fuel contract, for both of our fuel types, twice over the last four years in an effort to reduce costs. We were very pleased with the outcome of these tendering processes as they have afforded us not only lower prices, but also supply channels which were not open to us before. We now have, we believe, a redundancy capacity should fuel suppliers opt out of our supply contract for any reason. We have also taken advantage of purchasing options afforded to us by one of our suppliers and have taken advantage of what we see as momentary dips in fuel prices to buy forward which has allowed us to save costs. As recently submitted to the Commission in a Fuel Adjustment Rate amendment request, we have afforded savings to our customers of some \$3million dollars in the last 12 months by buying product ahead of shipment dates.

We will continue to explore fuel options to try and reduce the cost of the key component of energy production. Fuel types such as Liquefied Natural Gas and Compressed Natural Gas are being researched to understand the potential options for us into the future. We recently made a presentation to the Minister of Energy and Infrastructure regarding the potential of a Natural Gas alternative. Natural Gas, which is less costly and significantly cleaner burning, fits with the Government's desire to reduce carbon emissions in the future.

Finally, we also believe that our new plant will afford us significant savings through increased engine efficiency. In Appendix 5, you will see our estimates of the increase in efficiency to be achieved by the addition of these new engines. We believe based on our detailed analysis that the efficiency savings will amount to some \$7.5 million per annum in fuel costs, and these savings would be passed on to the consumer through the Fuel Adjustment.

## **Other Initiatives**

We are pleased to note that our major initiative to become ISO 14000 certified was achieved in 2010. This is a major milestone for the organization and serves to reinforce our commitment to the environment and the impact we have on it as an organization. ISO 14001 is an internationally accepted specification for an environmental management system. It specifies requirements for establishing an environmental policy; determining environmental aspects and impacts of products/activities/services; planning environmental objectives and measurable targets; implementation and operation of programs to meet objectives and targets; checking and corrective action, and the management review thereof. We are hugely proud of this accomplishment as we are the only entity on the Island to have achieved such certification.



BELCO is also committed to becoming compliant with the ISO 18001 Occupational Health and Safety standards. BELCO continues to reinforce and stress to all employees the need for safety and safe work practices while also considering the public in all safety decisions. The Company remains committed to reducing and preventing accidents and accident-related loss of lives, time and resources.

BELCO continues to review processes employed to complete work, to ensure these are the most efficient and effective as possible. We have in place Business Performance Indicators (BPI) which address a balanced scorecard approach that encompasses both key metrics and targets for performance. BPI focuses on those measurement categories that are vital to corporate success, including but not limited to; profitability; plant availability; operational reliability; operations and systems performance, and customer satisfaction. The purpose of this undertaking is to ensure continuous improvement by focusing on a set of measurements, metrics and targets that are critical for corporate success.

We also recognize that we must continually add value to every customer dollar spent with us. We are looking to enhance customer service and add products and services to those we currently offer. We have recently added a new Customer Information System that will afford us more billing options. We have implemented e-billing and Direct Debit functionality and we intend on pursuing other options such as levelized billing and enhancing customer payment options by accepting debit and credit cards.

This submission is not only about a simple increase in rates. We have sat and listened to the Commission and the Ministry of Energy and have included in this application new rate designs and options in this application to ensure that consumers are provided the opportunity to reduce their costs of electricity. We are also in the process of designing a Time-of-Use pilot rate which we will submit to the Commission in the New Year.

We have also listened to the Commission and the proposed rate structures for residential and small commercial customers are now based on the “inclining block rate” philosophy, where the more electricity a customer uses, the higher the cost per unit. This is intended to encourage customers to use less. We are inverting our residential and small commercial tariffs to further encourage conservation. These higher priced inclining blocks and Time of Use (TOU) pilot option are direct and immediate responses to the White Paper. In addition, it is our intent to pursue several other initiatives suggested in the White Paper including a “buy-back” (net metering) methodology for renewables based upon avoided costs, a joint collaboration on the feasibility of decoupling, a comprehensive review of avoided future supply costs to assist with the appeal to IPPs, and research into the development of a standby tariff for the development of self-generation.

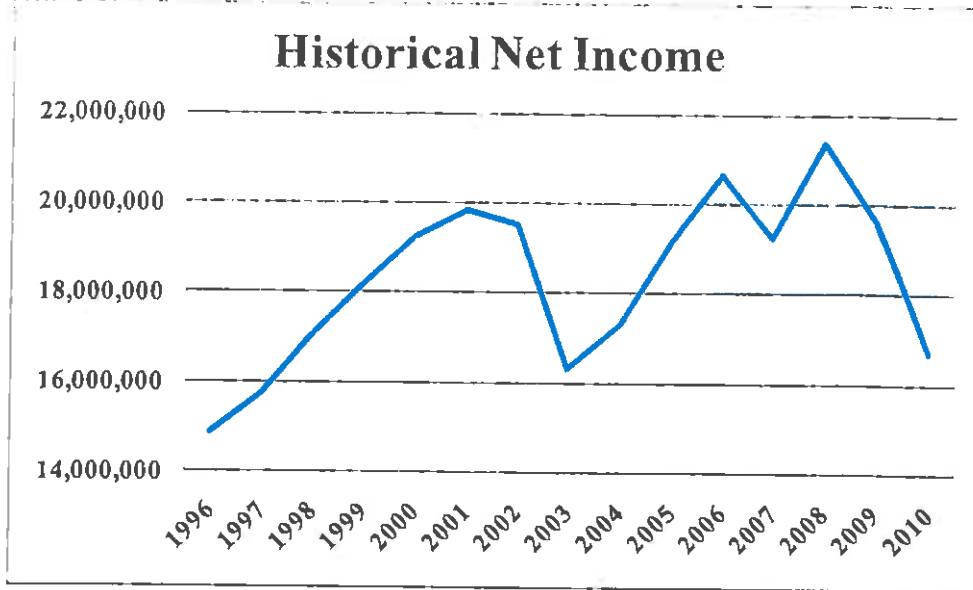
*“The needs of the specified business for adequate working capital and reasonable reserves”*

### **Financial Review**

Apart from 2008, BELCO's Net Income has decreased since 2006 due to rising costs and flattening or declining kWh sales (see Charts 1 and 2 and Tables 1 and 2 below). As the majority of BELCO's operating costs are essentially fixed, any reduction in sales revenues will have a direct negative impact on the Company's profitability. Also, any unusual or unanticipated expenses that are beyond our control can have a dramatic effect on results. For instance, during this period we experienced major malfunctions to two of our generating units which required us to incur higher labor costs to ensure that maintenance on the rest of our plant was performed quicker to ensure the security of electricity supply. In addition, in 2009 the price of lubricants that are used extensively by our generating plant nearly doubled due to increases in world fuel prices. Also, since 2007 financial markets have been in turmoil which resulted in increased costs for our Defined Benefit Pension plan.

To compensate for this decline in Net Income, the Company has taken steps to reduce its costs without jeopardizing our ability to perform as a secure and reliable electric power provider for the Country. For example, we have implemented a Reliability Centered Maintenance strategy to improve our maintenance programs which will result in reduced costs, greater availability of our more efficient generating units and a better understanding of our current level of risk and how best to mitigate that. In addition, we have taken steps to ensure the organization has the optimal level of staff to meet day-to-day operations. Consequently, we offered an early retirement option which was ultimately accepted by 26 out of 31 eligible employees. Although the Company incurred a one-time cost for this, it is anticipated that this will result in reduced compensation costs going forward. Finally, BELCO's Defined Benefit Pension Plan, which was closed to new employees as of January 1, 2006, will be frozen on December 31, 2011 and all current active members will be enrolled in a Defined Contribution Plan. This will also result in some cost savings, as well as eliminate any impact of fluctuating investment markets to the Company.

**CHART 1: BELCO Net Income**



**TABLE 1: Historical Financial Results**

Year	Net Income	Change in Net Income
1996	14,855,222	9.60%
1997	15,729,316	5.90%
1998	17,041,148	8.30%
1999	18,176,831	6.70%
2000	19,229,879	5.80%
2001	19,807,374	3.0%
2002	19,505,653	-1.50%
2003	16,322,519	-16.30%
2004	17,312,102	6.06%
2005	19,164,725	10.70%
2006	20,659,192	7.80%
2007	19,217,850	-6.97%
2008	21,374,791	11.22%
2009	19,655,639	-8.04%
2010	16,704,620	-15.01%
<b>Total</b>	<b>274,756,861</b>	
<i>2011 Forecast</i>	<i>11,785,685</i>	<i>-29.45%</i>

**CHART 2: Kilowatt Hours (kWhs) Sold**



**TABLE 2: Sale of Kilowatt Hours**

	2006	2007	2008	2009	2010	2011 Forecast
<b>kWhs sold (000's)</b>	631,365	643,821	644,954	656,083	650,571	630,496
<b>% - Change</b>	2.4	2.0	0.2	1.7	-0.8	-3.1

The Consumer Price Index ("CPI") has been an integral benchmark used in the past for comparing BELCO's requested rate increases. The CPI is a universally accepted tool used to measure changes in the average price paid for a fixed quantity of goods and services. It should be noted that in Bermuda, Fuel and Power is given a weighting of 3% in the compilation of the CPI. The implication is that consumers tend to spend less on this category than other goods and services. See Appendix 6 for a description of the CPI.

While we still believe that CPI is a valid standard, we take the position that this comparison must be viewed over a longer period of time rather than just annually. Table 3 below compares the last 18 years of BELCO price increases to the annual change in CPI.

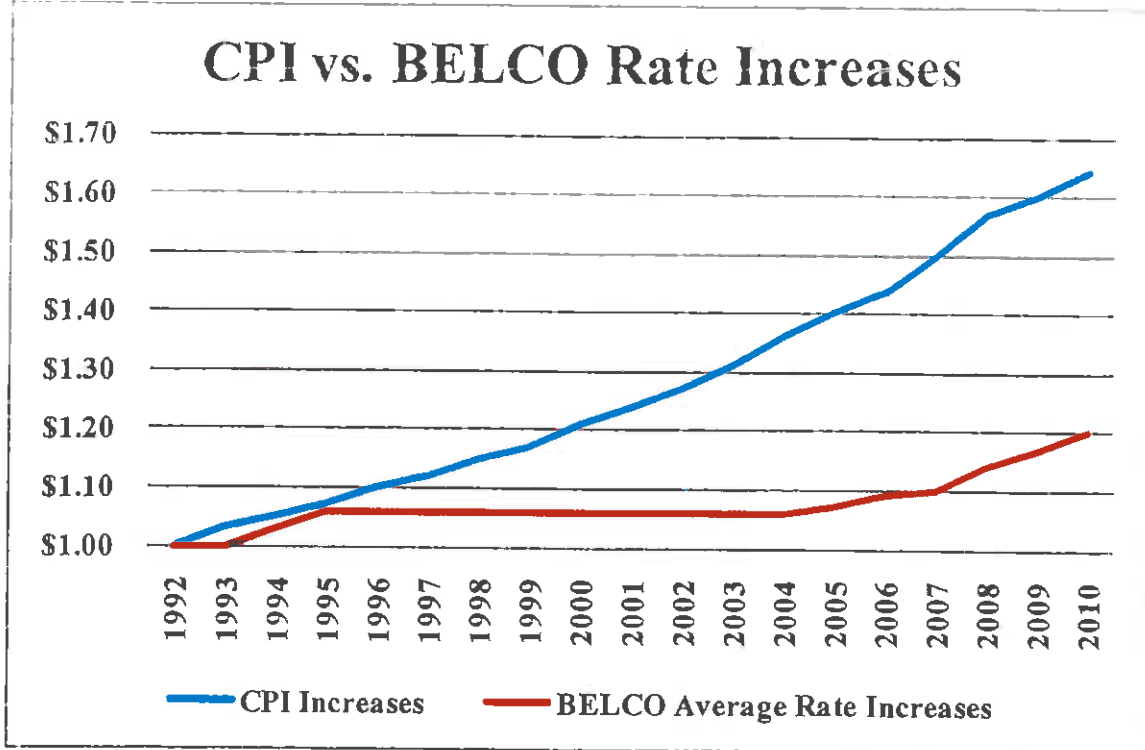
**TABLE 3: Comparison of CPI Changes to Average BELCO Rate Increase**

<b>Year</b>	<b>CPI Increases</b>	<b>BELCO Average Rate Increases</b>
1993	2.5%	-
1994	2.3%	2.75%
1995	2.5%	2.75%
1996	2.5%	-
1997	2.1%	-
1998	2.0%	-
1999	2.4%	-
2000	2.7%	-
2001	2.9%	-
2002	2.3%	-
2003	3.2%	-
2004	3.6%	-
2005	3.1%	1.5%
2006	3.1%	1.5%
2007	3.8%	1.5%
2008	4.8%	3.2%
2009	1.8%	2.6%
2010	2.4%	2.5%
2011 (Through July)	2.0%	-

At first glance, the data in the table suggests that the average BELCO rate increase has been higher than CPI in five out of the eight years. However when viewed over the entire period, the results are significantly different. During the period between 1996 and 2005 we successfully financed our operations and required capital expansion from income growth and cost containment efforts, and thereby avoided any form of rate increase. Between 2005 and 2007 we increased rates by a minimal 1.5% per annum when the average CPI over this period was 3.1 % per annum. Finally, during the period from 2008 through 2010 we increased rates by an average of 2.7% when average CPI for those three years was 3%.

In fact, when viewed over the entire 18 year period, the effect of CPI on \$1.00 versus BELCO's rate increases is strikingly different as can be seen in Chart 3.

CHART 3



As the chart shows, an item costing \$1.00 in 1992 adjusted for annual CPI increases would now cost \$1.67. In comparison, using BELCO's average rate increases, \$1.00 of electricity in 1992 would cost \$1.20 in July 2011; a savings of 28.1%. Consequently it is our position that, to date, BELCO has made a concerted effort to contain its increases below CPI over the long term and will continue to remain well below the CPI trend even with the requested increase.

Future rate increases are proposed with the desire to keep our rate increases below the cumulative impact of the rate of inflation while also ensuring that the results of our Cost of Service Study and the desired returns from each rate class, which ensure some level of parity, are achieved.

### *Financial Projections*

As part of its annual financial planning process and the Cost of Service Study exercise, BELCO has prepared projections of future results using its best estimates and information currently available. These include assumptions regarding kWh sales, generation plant costs, transmission and distribution enhancement costs, as well as additional costs for labor and the impact that renewables will have on the Company's future sales. All these estimates are embedded in our "base case" financial planning scenario seen in Appendix 7.

This base case scenario is prepared based on several underlying assumptions or key variables which are as follows:

- The projections have been prepared based on the assumption that the Company will be required to continue to be the sole significant supplier of electricity for the island for approximately the next 10 years.
- Sales to residential customers will decrease marginally at 0.3% for each of 2012 and 2013 to reflect the continued impact of departing guest workers. We do not foresee any increase in electricity consumption from existing residential customers
- Demand customer kWh sales are expected to increase slightly in 2012 as new projects such as the National Aquatic Centre and the Corporation of Hamilton's X-ray facility on the docks are commissioned and operational. In addition, we have factored modest increases in consumption for this customer class in each of 2013 and 2014.
- We have also factored the potential impact that small-scale renewable energy systems will have on our kWh sales. We have used our current experience to date and projected a further effect of 5% annual growth in lost sales.
- As previously stated, the Company is facing unprecedented levels of capital expenditure over the next decade which will require the use of significant amounts of debt financing. These are also included in the scenario. For the purposes of these projections we have assumed that this will be a combination of 10-year debt at 6% and 15-year debt at 8%. Based on the significant levels of debt required it is anticipated that funding these requirements will require rate levels higher than the Company presently enjoys because of the obvious risk related to this level of expansion.
- Over the last several years, as kWh sales declined the Company has endeavored to control or reduce costs where possible. The financial projections reflect that as labor costs are anticipated to rise by no more than 3% per annum, while all other costs will increase at 1.5% per annum – below expected CPI levels.

Given the current economic climate, there will likely be some reluctance to increase electricity rates, despite the fact that our previous analyses have shown that these have been significantly behind the pace of inflation. Consequently, while the base case

scenario does not include any rate increases for the next 10 years, the projections show that this is not sustainable. Should this be the case, the projections show that the Company's results will decline dramatically over the next several years and will be negative by 2015, if not sooner. In addition, without the increase in rates the Company will not be able to generate sufficient cash with which to assist the funding of necessary capital expansion and will therefore have to rely further on higher levels of debt financing, such that this could be in excess of \$370 million by the end of 2020. This then is compounded and places a further cost burden on the organization in interest payments to service those borrowings. As such, the Company will find it extremely difficult to sustain operations at the levels required and which our customers have come to expect without any increase in rates.

Additional financial projections have also been prepared as comparatives to our base case. For example, what level of rate increase by customer class would be required to enable the Company to earn a return on equity of 5% in 2012, 5.5% in 2013 and 6% in 2014 or a 10% return for each of the three years? A summary of these is shown in Appendix 8.

The dilemma Bermuda faces with respect to having to replace aging infrastructure and adding new plant to meet load growth is not unique and is having a similar impact on the financial results of utilities worldwide. As a result, public utility commissions appear most concerned about what is referred to as "rate shock" which sees a significant increase in rates (10-15%) in the years of actual investment. To this end they propose multi-year, broad-based plans for base rates as they look to ensure the risk/return imbalance is addressed by approving rates based on multi-year forecasts. We have also taken this into consideration for our financial projections when determining what the impact of increasing electricity rates will be to our results and at what cost to our customers.

We have included in this package for your reference the Company's last two years of audited financial statements as well as the Annual Reports of the parent company, Ascendant Group Limited (see Appendix 9). Within these reports is a comprehensive review of the initiatives we are undertaking as an organization as we strive to provide a secure, reliable and sustainable electric power system for the people of Bermuda.



*“The need to afford Investors a reasonable return on their investment”*

### **Comparative Rates of Return**

BELCO is a wholly-owned subsidiary of Ascendant Group Limited (“AGL”) whose shares are listed on the Bermuda Stock Exchange. As a publicly traded company, AGL has a responsibility to maintain a level of return for its shareholders. Historically, we have always been conscious of our social responsibility with regard to our preferred supplier position and the impact of our rates on the general public. However as Table 4 below shows, our rates of Return on Equity and Return on Rate Base have been declining for the past 15 years as we attempt to balance these two responsibilities.

**TABLE 4: BELCO Rate of Return and Return on Rate Base**

<b>Year</b>	<b>Return on Equity</b>	<b>Return on Rate Base *</b>
1996	9.98%	
1997	10.23%	8.78%
1998	10.34%	
1999	10.27%	8.52%
2000	10.40%	
2001	10.00%	
2002	9.47%	9.07%
2003	7.55%	6.79 / 8.22%
2004	7.65%	
2005	7.78%	7.14%
2006	7.97%	7.30%
2007	6.75%	
2008	7.51%	
2009	6.59%	
2010	5.44%	4.92%
<b>Total</b>		
<i>2011 Forecast</i>	<i>3.79%</i>	

\* Return on Rate Base is calculated by the Cost of Service Study. Cost of Service Studies are generally performed every two years, however due to the formation of the new Energy Commission and Rate Review undertaken, it was decided to wait until 2010 to complete another study.

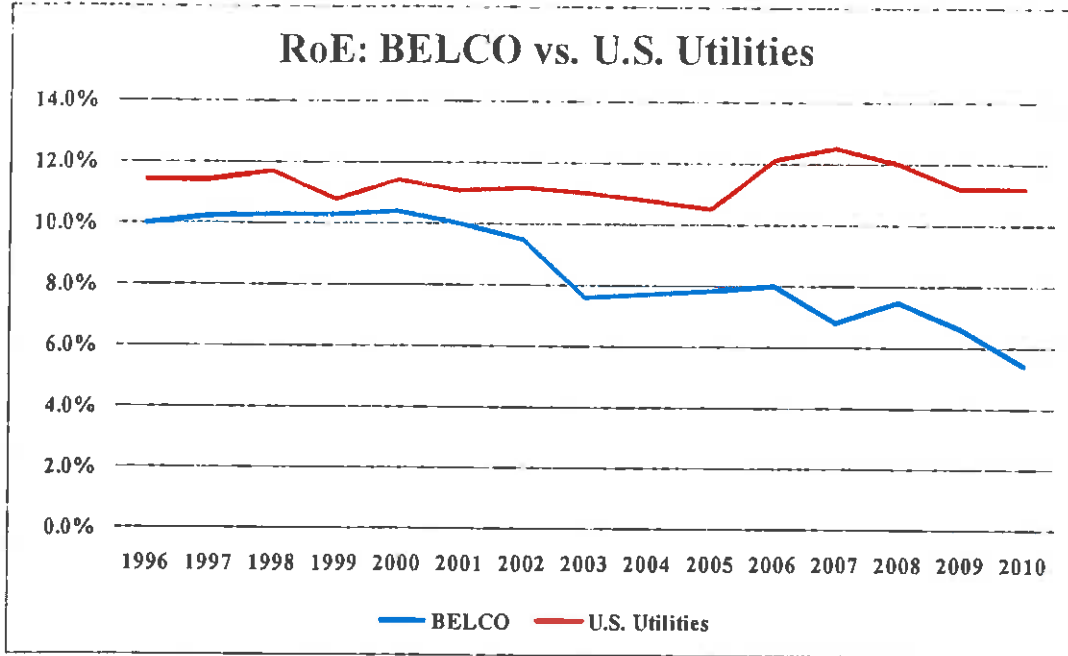
In comparison to the average return on equity earned by the top 45 investor-owned U.S. utilities, BELCO's ROE has historically trended lower as seen in Table 5 below. This is even more pronounced since 2002 as we have added to our asset base using retained earnings to pay for it, while limiting any rate increases to levels less than inflation.

**TABLE 5: Comparison of 2010 Return on Equity:  
BELCO & Average of 45 U.S. Utilities**

	<b>BELCO</b>	<b>U.S. Utilities *</b>
1995	9.71	11.6
1996	9.98	11.4
1997	10.23	11.4
1998	10.34	11.7
1999	10.27	10.8
2000	10.40	11.4
2001	10.00	11.1
2002	9.47	11.2
2003	7.55	11.0
2004	7.65	10.8
2005	7.78	10.5
2006	7.97	12.1
2007	6.75	12.5
2008	7.51	12.0
2009	6.59	11.2
2010	5.44	11.2

\* Source: SNL Financial LC

**CHART 5**



Source: SNL Financial LC

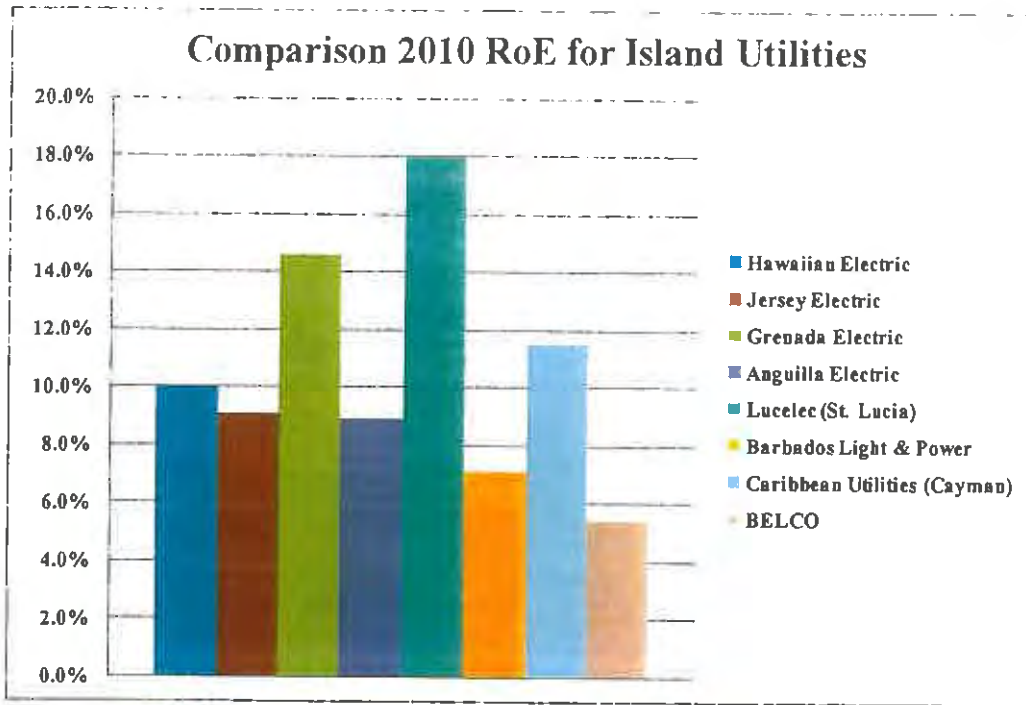
As is the case with other island utilities, BELCO faces unique factors which other North American utilities do not have. Consequently, we have compared BELCO’s return on equity to other investor-owned island utilities – several of which are fellow members with BELCO in the Caribbean Electric Utility Service Corporation (CARILEC). CARILEC is an association of electric utilities, suppliers, manufacturers and other stakeholders operating in the electricity industry in the Caribbean.

**TABLE 6: Comparison of BELCO’s RoE with Island Utilities**

Utility	Return on Equity
Hawaiian Electric	10.0%
Jersey Electric	9.1%
Grenada Electric *	14.6%
Anguilla Electric *	8.9%
Lucelec (St. Lucia) *	18.0%
Barbados Light & Power *	7.1%
Caribbean Utilities (Cayman) *	11.5%
BELCO *	5.4%

\* CARILEC member

CHART 6



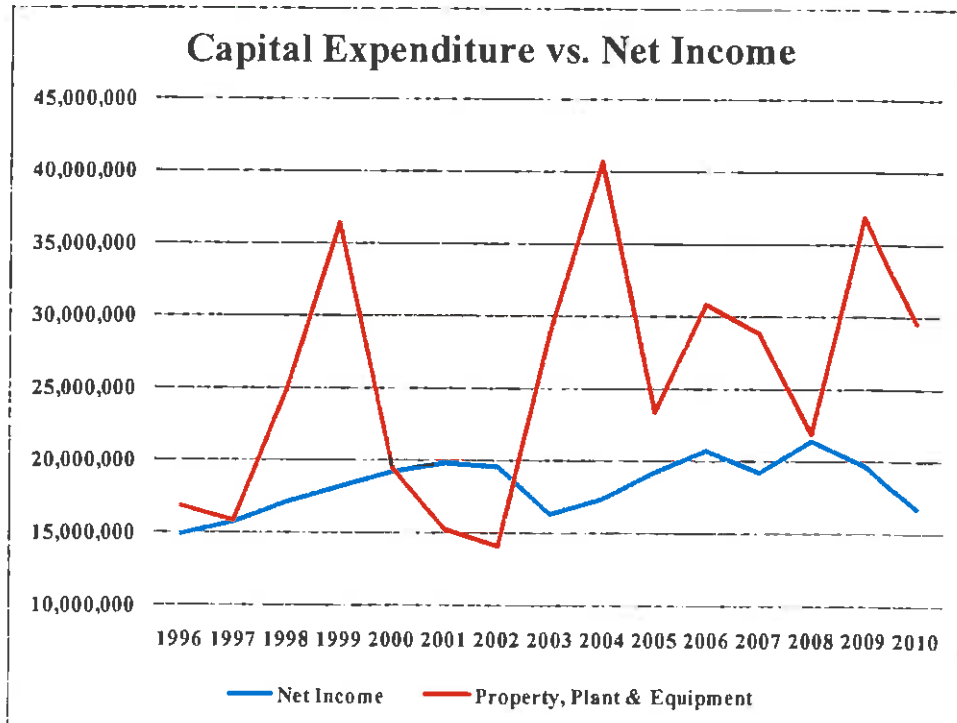
As is indicated, BELCO's 2010 rate of return is less than that of other comparable island utilities. Indeed, such a low rate of return is not one which would be expected by any existing shareholder, let alone be attractive to new investors.

The most compelling point of interest is the extent to which our Shareholders have funded spending on capital assets over the last 15 years. Table 7 below shows a comparison of Net Income to investment in Property, Plant & Equipment and thus the extent to which Shareholders' funds have been used to fund the capital expansion programs necessary to ensure a reliable and effective plant and network.

**TABLE 7: Investment in Property, Plant and Equipment**

Year	Net Income	Property, Plant & Equipment
1996	14,855,222	16,838,823
1997	15,729,316	15,753,192
1998	17,041,148	25,025,846
1999	18,176,831	36,359,652
2000	19,229,879	19,400,563
2001	19,807,374	15,261,646
2002	19,505,653	14,104,306
2003	16,322,519	28,898,809
2004	17,312,102	40,681,997
2005	19,164,725	23,358,623
2006	20,659,192	30,748,606
2007	19,217,850	28,848,210
2008	21,374,791	21,794,926
2009	19,655,639	36,811,866
2010	16,704,620	29,521,391
	<b>274,756,861</b>	<b>383,408,456</b>

**CHART 7**



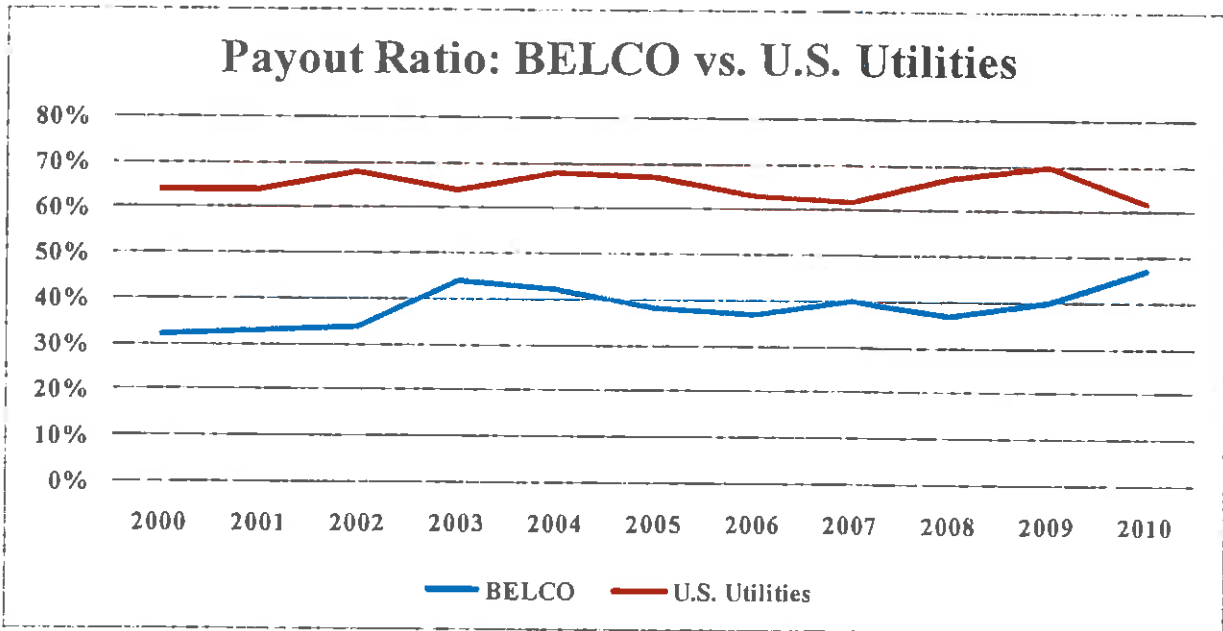
BELCO's other financial performance indicators are lower than those typically seen for investor-owned utilities in the United States. This is especially true of the Dividend Payout Ratio.

BELCO's Dividend Payout Ratio has averaged 39% for the last eleven years versus 65% for U.S. utilities.

**TABLE 8: Comparison of Dividend Payout Ratio:  
BELCO & Average of 45 U.S. Utilities**

	BELCO	U.S. Utilities
2000	32%	64%
2001	33%	64%
2002	34%	68%
2003	44%	64%
2004	42%	68%
2005	38%	67%
2006	37%	63%
2007	40%	62%
2008	37%	67%
2009	40%	70%
2010	47%	62%

**CHART 8**



\* Source: SNL Financial LC

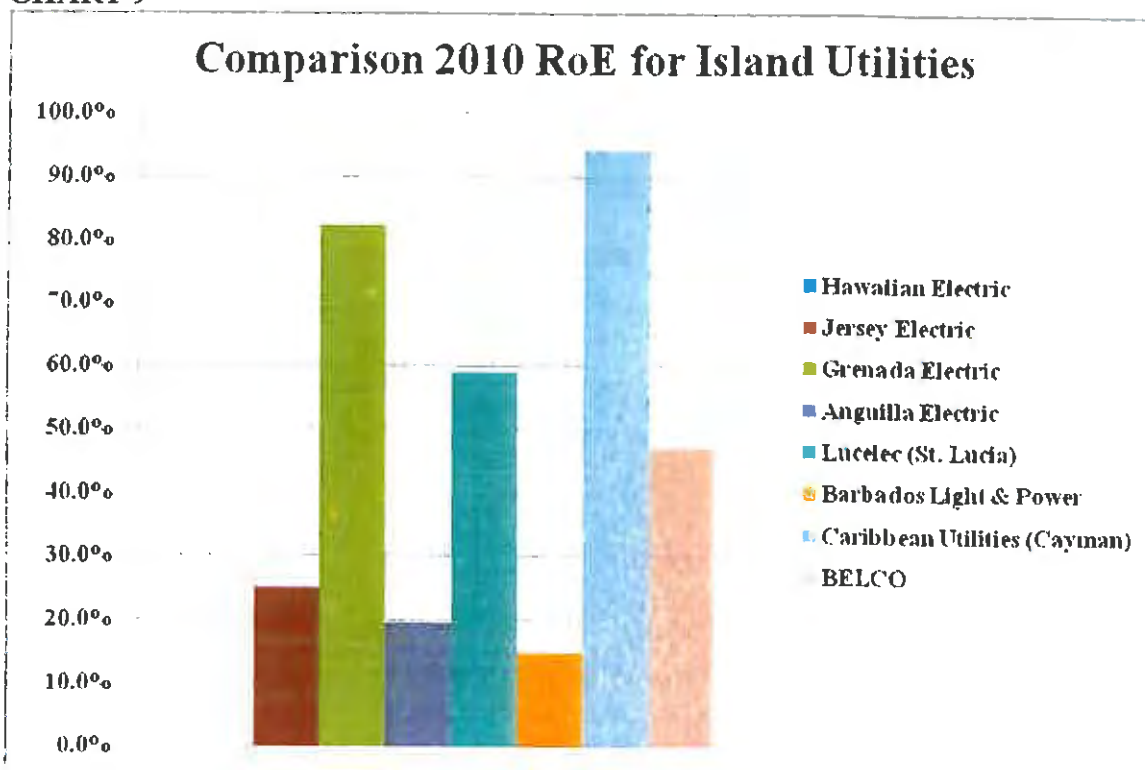
Finally, in comparison to the dividend payout ratio of other investor-owned island utilities, BELCO also lags.

**TABLE 9: Comparison of Dividend Payout Ratio:  
BELCO's vs. Island Utilities**

Utility	Payout Ratio
Hawaiian Electric	N.M.
Jersey Electric	25.1%
Grenada Electric *	82.3%
Anguilla Electric *	19.5%
Lucelec (St. Lucia) *	59.0%
Barbados Light & Power *	14.9%
Caribbean Utilities (Cayman) *	94.1%
BELCO *	47.3%

\* CARILEC member

**CHART 9**



N.B. Hawaiian Electric is a wholly-owned subsidiary of Hawaiian Electric Industries, Inc. which also holds investments in non-utility companies. Consequently, comparison of their dividend payout ratio is not meaningful.

At first glance the data suggests that BELCO's payout ratio is relatively high, although substantially less than those of several Caribbean utilities which have historically high ratios. However when compared to other Caribbean utilities with lower ratios, there are several mitigating factors that must be taken into consideration. For example, Anguilla Electric serves a much smaller customer base than BELCO and an economy that is solely dependent upon tourism. Recent tourism property developments have necessitated the

expansion of their entire electrical system which was funded by debt. Consequently, cash was retained to service this debt rather than pay it in dividends. Barbados Light & Power saw a 40% increase in net income for 2010 which was due to an increase in energy rates – their first in 26 years. That company's board of directors decided to retain cash to build reserves. For the two years prior, their payout ratio has been in excess of 20%. Therefore when these factors are taken into consideration, BELCO's dividend payout ratio is not out of line with these other utilities.



## Cost of Service Study

Since 1985, every two years the Company attempts to undertake a Cost of Service Study, which is an independent review conducted by an outside resource who is an expert in the field. This process determines the cost to serve each class of service in order to evaluate the adequacy of the rate schedules applied to such classes. The Cost of Service Study can then be used as an aid in determining class revenue levels, rate structures and rate elements, and it also provides useful information on customer electricity usage patterns.

Our most recent Cost of Service Study, conducted on 2010 as the test year, has shown that the overall rate of return earned on rate base, which is positively correlated with overall rate of return on equity, continues to decline and has decreased to the very low level of 4.92%. As you will see from the following tables this return has been steadily declining over the years and is no longer at a level which is sustainable for the organization especially with the major capital investment program needed immediately, during the next three years, and then the longer term as discussed earlier.

The rate rebalancing to bring the Residential customer class up to rate of return parity over the last three years has, as you will see, achieved its purpose. The lower rate increases during this same time frame for the Small Commercial customer class has also brought this customer class back to parity. Unfortunately, the Rate of Return (ROR) for the Demand Commercial customer class has been reduced significantly. This reduction in ROR relative to that of the Residential and Small Commercial classes is in part due to the relatively larger increase in the average sales revenue per kWh for the Residential and Small Commercial classes. In addition, there have been some changes in the cost allocations to rate classes. The slight change over the last three years of the Demand Commercial average sales revenue per kWh is also due to this class's relatively larger kWh sales growth than that of the other rate classes, coupled with the relatively lower charge for added kWhs for the Demand Commercial rate class. These factors have combined to reduce the rate of return from this class relative to the other rate classes.

As seen in Table 10 below, there is no longer a subsidization of the Residential class by the Demand and Commercial customer base which is a positive from a rates perspective. This form of cross class subsidization is often seen in utilities throughout the world. The result is that we do not need to move rates as much towards parity across classes as in former years. (However, we suggest that the Demand customer class should receive increases slightly above the rate increases likely for the Residential and Small Commercial classes in the interests of rate parity.) Instead, we can focus on overall revenue requirements and the "efficiency" of our prices. By efficiency, we mean indicating to our customers, to the extent possible, the cost to Bermuda of increasing consumption.

**TABLE 10**

<b>Rate of Return Summary</b>					
<b>Cost of Service Study</b>	<b>Total</b>	<b>Residential</b>	<b>Small Com'l</b>	<b>Demand Com'l</b>	<b>Street Lighting</b>
2010 Cost of Service	4.92%	6.10%	6.88%	1.95%	12.63%
2006 Cost of Service	7.30%	2.15%	14.29%	12.31%	9.50%
2005 Cost of Service	7.14%	1.89%	14.51%	12.14%	9.27%
2003 less storm exp.	8.22%	2.12%	15.21%	14.70%	12.45%
2003 Cost of Service	6.79%	0.21%	13.93%	14.30%	4.04%
2002 Cost of Service	9.07%	2.84%	17.54%	14.67%	7.23%
1999 Cost of Service	8.52%	4.90%	13.80%	10.78%	4.06%
1997 Cost of Service	8.78%	5.99%	12.06%	10.79%	6.87%
1995 Projected COS	7.95%	3.95%	11.88%	10.52%	4.21%
1993 Cost of Service	8.05%	3.08%	12.18%	12.26%	2.68%
1985 Cost of Service	11.59%	9.93%	16.09%	11.25%	0.12%

Another key finding or confirmation from the 2010 Cost of Service Study has been that the total customer cost for Residential customers, commonly referred to as the facilities fee, continues to be undercharged. The 2010 study suggests that the monthly cost to serve a residential customer is presently \$43.29. Our Residential facilities fee, which is the fixed amount we charge each month to cover these (non-volumetric) costs, is presently \$30. In recent years we have made considerable increases to this charge as in 2006 it was only \$13 per customer per month. This has been a significant contributor to increasing the average return from this rate class. However, it still does not completely cover the fixed costs to serve. Therefore, we should continue to increase this cost while compensating small users by means of relatively lower energy costs than those charged at higher usage levels.

The latest 2010 Cost of Service Study in its entirety has been included in Appendix 14 for the Commission's review. However, included in Appendix 10 are excerpts from the

study which support the statements made above and explain the Cost of Service preparation methodology.

### **Cost of Service Study Pro-formas**

In order to determine what might be the anticipated rate increases necessary to allow the Company to maintain a reasonable Return on Equity and rate base we have prepared pro-forma financial analysis on anticipated sales levels and costs of operations specifically through 2016. This can be seen in Appendix 7. One of the basic underlying assumptions in this modeling is that we will see limited, to no, increase in kWhs sold due to conservation and the impact of renewable technology.

The pro-forma analysis indicates that without rate increases the Company's Net Income becomes a loss by 2015. The interest on debt used to fund capital expansion is significant and must be offset by revenue growth. Unfortunately with anticipated kWh sales flat, revenue growth is not achievable without rate increases. The Commission will also note that in this modeling we hope to limit growth in non-wage expenses to an average 1.5% per year, while we anticipate that labor costs will grow at 3%. This latter growth rate will be dependent on CPI as the indicator for wage and salary increases.

These pro-forma financial estimates were supplied to our rates consultants to allow them to prepare resultant rates of return on rate base given our capital additions to rate base and the operating results we expected. These results are included in Appendix 11. As the Commission will note we have a negative return on rate base by 2014 with no increase in rates and therefore revenues.

These pro-forma test years for Cost of Service also allowed us to look at what type of revenue requirements are needed from each of the rate classes at varying rates of return in order to maintain a level of parity of return across rate classes. This helps us to understand what type of average rate increases are then needed to achieve the desired revenues for the rate class based on the new proposed rate structures. The comparative analysis for the varying returns is also included in Appendix 11.

You will see clearly that in order for us to earn comparable rates of return to our US and Caribbean counterparts we would have to increase our rates significantly. We recognize that this is not achievable given the sizable increases that would have to be imposed during a period of economic softening and which would be extremely onerous on our customers. However, we firmly believe that increases are necessary in order to allow us to earn the minimum levels of income required to support our interest and debt repayments for funding for new plant and equipment, as well as afford us the opportunity to pay a reasonable dividend to our shareholder to ensure a reasonable return on investment. We firmly believe that this can be achieved without imposing excessive price increase requirements on our customer base and, as previously noted, have determined that approximately a minimum of \$20 million Net Income per annum as being the desired level of income to sustain our operations. Our financial forecasts suggest that this will allow us to meet our financial obligations, such as interest coverage

and debt repayment, going forward and also because we will now become more debt leveraged our Return on Equity is also increased to more reasonable levels. We have not requested rate increases based on Rates of Return on Rate Base. It is evident that if we were to request such that the required increases in all classes would have to be far in excess of CPI which has tended to be our historical benchmark.

## Recommendations

Our recommended rate structures are impacted significantly by the desire to encourage our customer base to consider the cost of electricity and realize that more usage results in higher bills. To this end the comments by the Energy Commission during recent discussions have been heeded, and we have, in turn, constructed the rate structure on an inclining block methodology for Residential and Small Commercial which sees higher prices for higher usage as against the previous rate structure.

You will see that there is a desire to continue to move to recoup our fixed costs to serve our residential customers. Therefore, we are proposing to continue the increases in this Facilities Fee for the Residential Class and Small Commercial customer classes. However, in doing so we have become aware of several customers, particularly those customers who have Small Scale Renewable systems at their residences, who are confused by the minimum charge they are being asked to pay which is higher than their facilities fee. Our proposal, therefore, recommends that the minimum bill structure be removed and the facilities fee will become the “minimum” bill a customer will receive.

In addition, our proposed rates will include a consolidation of the rate categories in both the Residential and Small Commercial classes for simplicity. We also have decided to simplify the “blocks” for our rate structures for both Residential and Small Commercial rates. In order to select appropriate blocks given our objectives of bill stability and promotion of conservation, we considered different options. These options and the benefits of each are discussed in more detail in Appendix 12.

We therefore, request that you consider average rate increases as follows:

### Residential

- 3.5% average rate increase in 2012 over the projected 2011 average rate (4.4% increase from 2010), followed by a 3.5% average rate increase per annum through 2014.
  - This will be inclusive of a Facilities Fee increase of \$3 in each of 2012, and 2013 and a \$2 increase in 2014.

### Demands Commercial

- 5% average rate increase per annum through 2014.
  - The Facilities Fee remains at \$100 per month through 2014.
  - Other charges increase proportionately

### Small Commercial

- 3.75% average rate increase in 2012 over the projected 2011 average rate (4.7% increase from 2010), followed by a 3.75% average rate increase per annum through 2014.
  - The Facilities Fee of the Small Commercial class increases in the same manner as that of the Residential class: \$3 in each of 2012 and 2013 and a \$2 increase in 2014.

A summary of these proposed rates by rate class can be found in Appendix 13.

As has been our practice in the past, we will not increase rates if we deem our income levels appropriately sustain our needs for the ensuing years. As you are well aware, we took this step in 1996 when we restructured rates to remain revenue neutral, rather than impose the agreed upon rate increase of 2.75%.

The financing requirements over the next 10 years are significant. The ability to raise funding is predicated on our ability to repay the lenders over the required period. In order to do so, we will have to demonstrate that our financial projections will satisfy the likely interest coverage ratios and debt to equity ratios imposed by financial institutions. This can only be achieved if we receive agreement on the rate increases proposed. We do not believe that any financial lending institution will consider supporting us without these rate increases being agreed, guaranteed and in place so that they can gain a level of comfort that they will be repaid.

It is as important to note that although this is a proposed increase in base rates of electricity we believe that the new plant additions, which this increase is being sought to support, will allow us by 2013, to reduce significantly the overall impact of the final electricity bill for our customers and maintain the high level of reliability that Bermudians have come to expect of BELCO. The fuel savings of \$7.5 million noted earlier, resulting from greater engine efficiency, will be passed through to the customer directly via the fuel adjustment clause. We anticipate that based on the number of kWhs to be sold this will amount to 1.2 cents per kWh. This will more than soften the impact of the 1.0 cents, 1.1 cents, and 1.1 cents per kWh increase in our base rate for Residential, Small Commercial and Demand Commercial customers respectively in 2014. In terms of overall dollars, the average annual rate increases we have proposed for 2014 will amount to \$6.7 million in additional revenue from electricity sales so the fuel savings offsets these higher rates charged to the customer and as a result overall customers will likely see no increase on their bills from 2013 to 2014 provided there is no change in their consumption pattern.

An example of the impact of our proposed restructuring is seen in the proposed Residential Rate comparison below for 2012. As noted previously, this restructuring consists of three elements: 1) the standardization of block boundaries in our tariffs; 2) the introduction of inclining block pricing; and 3) elimination of the minimum bill provision.

**TABLE 11: Proposed Rate Compared to Present Rate – Standard Residential Rate**

Charge	Block (kWh)	Price	
		Current	Proposed
Facilities		\$30.00	\$33.00
Energy	< 100	\$ 0.1575	
	100 to 700	\$ 0.2400	
	> 700	\$ 0.2285	
	< 250		\$ 0.1842
	250 to 700		\$ 0.2212
	> 700		\$ 0.2762

The dollar impact of these rates on the residential customer using various levels of kWhs is noted below. The removal of the minimum bill provision is evident in the top line of the table below. Other customers have a variety of bill changes, depending on their size and the change in the structure of the blocks in their tariff. Overall, we believe these increases are minimal after deducting the facilities fee increase, and as can be seen, to a greater degree, impact those who use more electricity as the rate increase per kWh for usage in excess of 100 kWh is higher.

**TABLE 12: Comparative Bills for Residential Customers (Fuel Adj. 15¢ Net 5% discount)**

KWh Usage	Net Present Monthly Bill	Net Proposed Monthly Bill	Dollar Difference	Percentage difference
0	\$38.00	\$31.35	(\$6.65)	-17.5%
100	\$57.71	\$63.10	\$5.39	9.3%
700	\$280.13	\$283.05	\$2.92	1.0%
1,000	\$381.33	\$390.88	\$9.55	2.5%
2,000	\$740.91	\$795.77	\$54.86	7.4%
5,000	\$1,819.63	\$2,010.44	\$190.81	10.5%

The average monthly usage by our residential customer class is 700 kWhs. The present average price per kWh for this customer inclusive of the facilities fee is 40.02 cents. The proposed price per kWh for 2012 is 40.04 cents inclusive of the increase in facilities fee.

A comprehensive summary of the expected increases by rate class over the next three years is shown in Appendix 13 along with Net Bill comparisons for the various rate classes at various levels of usage. In addition we have provided a Revenue Summary by rate class and total system, which details percentage increases in total revenues for each class for the next three years. As shown on this summary, even with the proposed rate increases our total revenue will still be 0.3% less than that in 2010 and only projected to increase by 2.4% and 2.6% in 2013 and 2014, respectively.

We have also prepared a comparison of rates to other investor-owned island utilities to determine if there are significant differences in our rates to theirs. To this end, Table 13

below compares our present residential rate, including Fuel Adjustment, to these other island utilities. While each utility is unique in the issues it faces regarding plant mix, fuel type, environmental constraints and the like, we have tried to compare BELCO to those utilities who are as close to our situation as possible. As you will see, we all face the issue of high prices driven by the fact that we are island utilities without access to National Grids and our production is diesel driven. Jersey is somewhat unique in that they are supplied by the French Grid while Barbados has close proximity to Trinidad for its supply of fuel.

**TABLE 13**

	<b>Total</b>	<b>Average Cents per kWh</b>		
		<b>Total</b>	<b>Fuel</b>	<b>Energy</b>
	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
Barbados Light & Power	279.83	36.70	25.13	11.57
Caribbean Utilities	283.52	35.44	22.81	12.63
Maui	287.67	35.96	24.17	11.79
Lanai	326.81	40.85	28.93	11.92
Molokai	337.63	42.20	27.94	14.26
Hawaiian Electric	340.53	42.57	26.79	15.78
BELCO	350.30	43.79	17.50	26.29
Jersey Electric	369.23	46.15	24.30	21.85

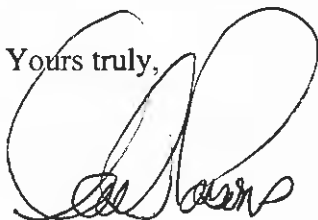


## Summary

The Company believes it has to balance the need for what it considers its shareholder should receive as a fair and reasonable return on its investment against increasing the cost of electricity to its customer base and maintaining a reliable electricity supply. We understand that our customers don't want higher bills and are providing new inclining block rate designs which will encourage conservation that may indeed minimize or even lower bills, but we also understand that most importantly they want reliable service. And we understand that in order to provide reliable service, we must have investors who are treated fairly and reasonably, or they will find other places to invest their money. Our request is made against the backdrop of producing a sufficient but not excessive level of income which allows the Company to maintain a reasonable dividend payout ratio, while ensuring it maintains adequate cash flows from operations to continue necessary capital expansion and enhancement, service debt, and maintain appropriate interest coverage ratios that will be considered by lenders. BELCO has and will continue to pursue opportunities to reduce cost, but will not reduce reliability and service. However the Company is approaching a position in which it must now seek assistance from a modest rate increase. To this end, we have projected that a level of approximately \$20 million in Net Income will be necessary to meet these requirements.

In closing we hope we have provided you with a comprehensive submission supporting our case for the proposed levels of rate increases in the various rate classes. As always, we are willing to supply you with any further information you require to help you reach your decision. We would also welcome the opportunity to discuss it in more detail at your convenience.

Yours truly,

A handwritten signature in black ink, appearing to read 'Andrew D. Parsons', written over a large, stylized circular flourish.

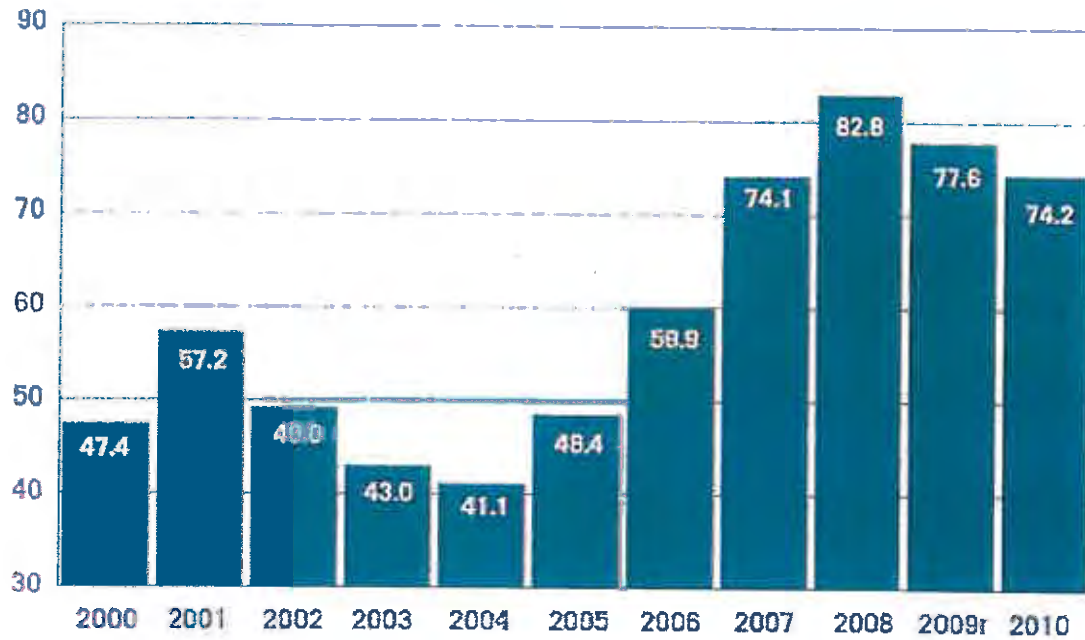
Andrew D. Parsons  
President

APPENDIX 1

## Capital Expenditures 2000-2010

U.S. SHAREHOLDER OWNED ELECTRIC UTILITIES

(\$ Billions)



r = revised

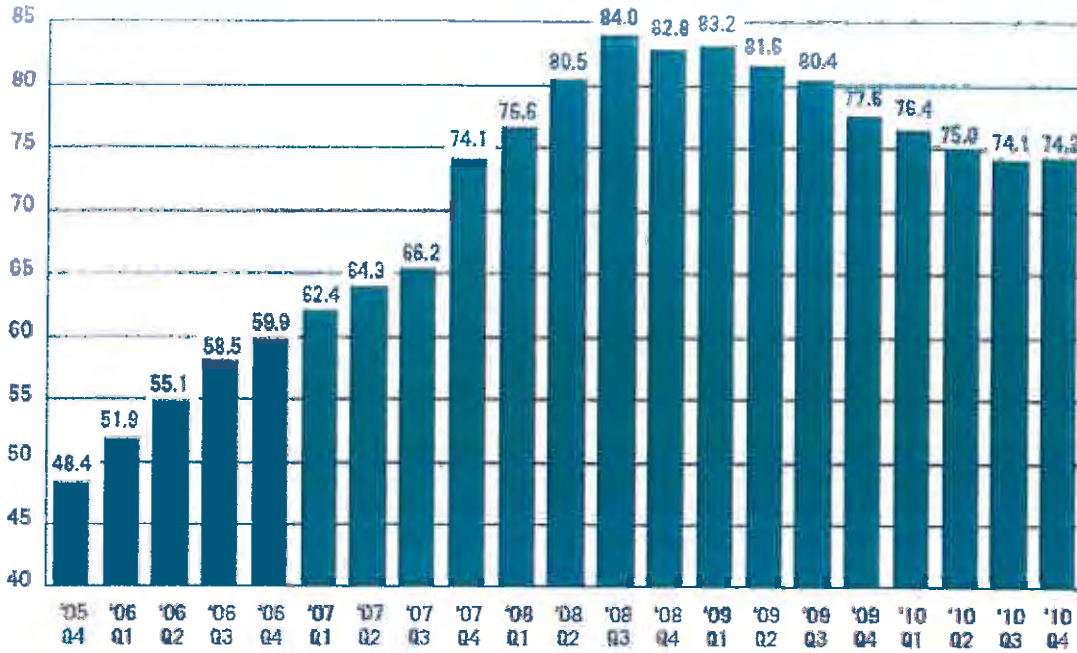
Source: SNL Financial and EEI Finance Department

**Trending reversed in the mid-2000s:** Overall electric IOU capex declined from \$77.6 billion in 2009 to \$74.2 billion in 2010, a 4.5% drop. However, the \$74.2 billion spent in 2010 is nearly double the \$40.2 billion invested during the 12-month period ending September 2004, which marked the cyclical low following the industry's competitive generation build-out.

## Capital Spending — Trailing 12 Months

U.S. SHAREHOLDER OWNED ELECTRIC UTILITIES

(\$ Billions)



Source: SNI Financial and EEI Finance Department



**BELCO**

# Energy Plan

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Public Forum Presentation  
January 25, 2011



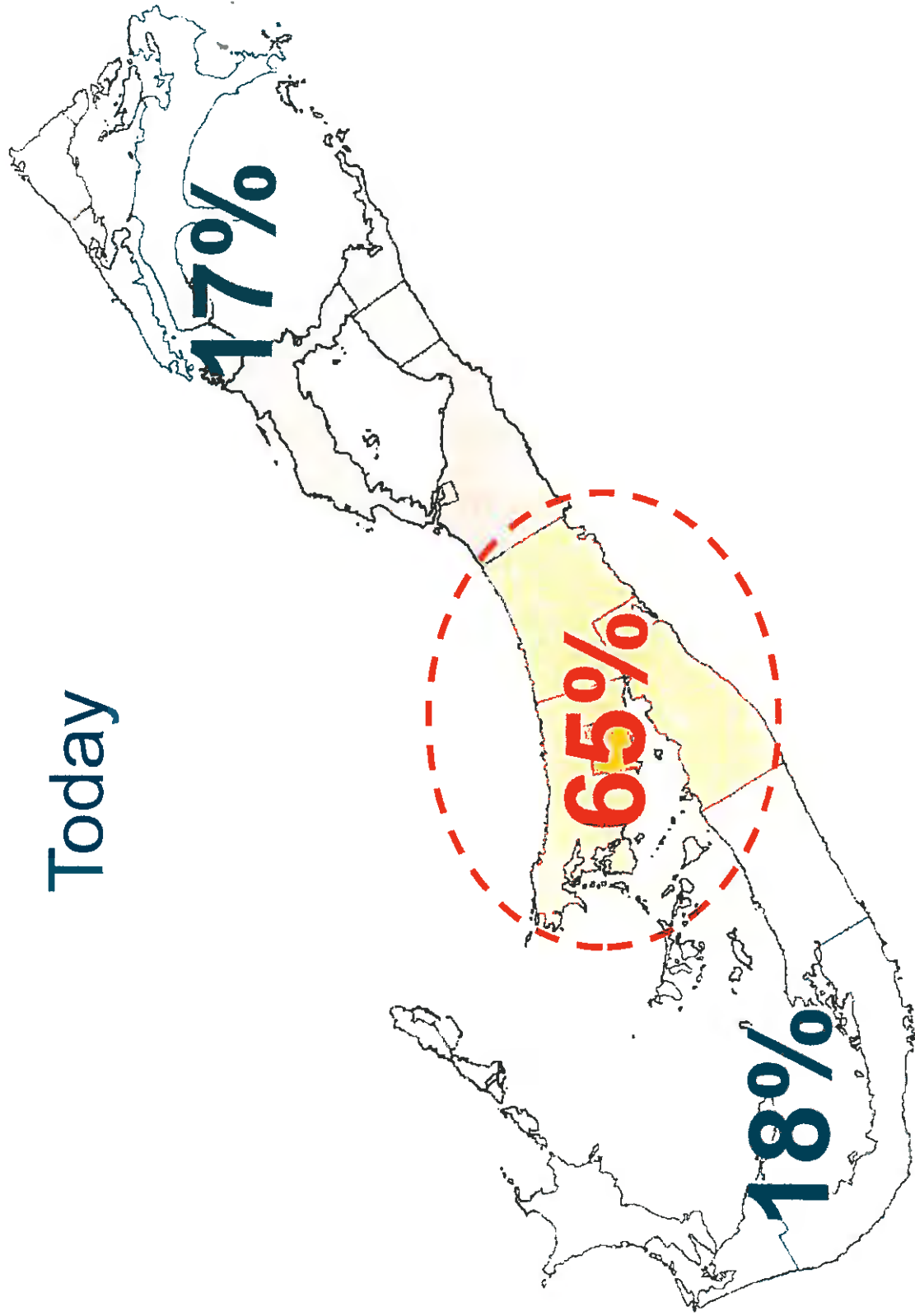
**BELCO**

# Today's Methods

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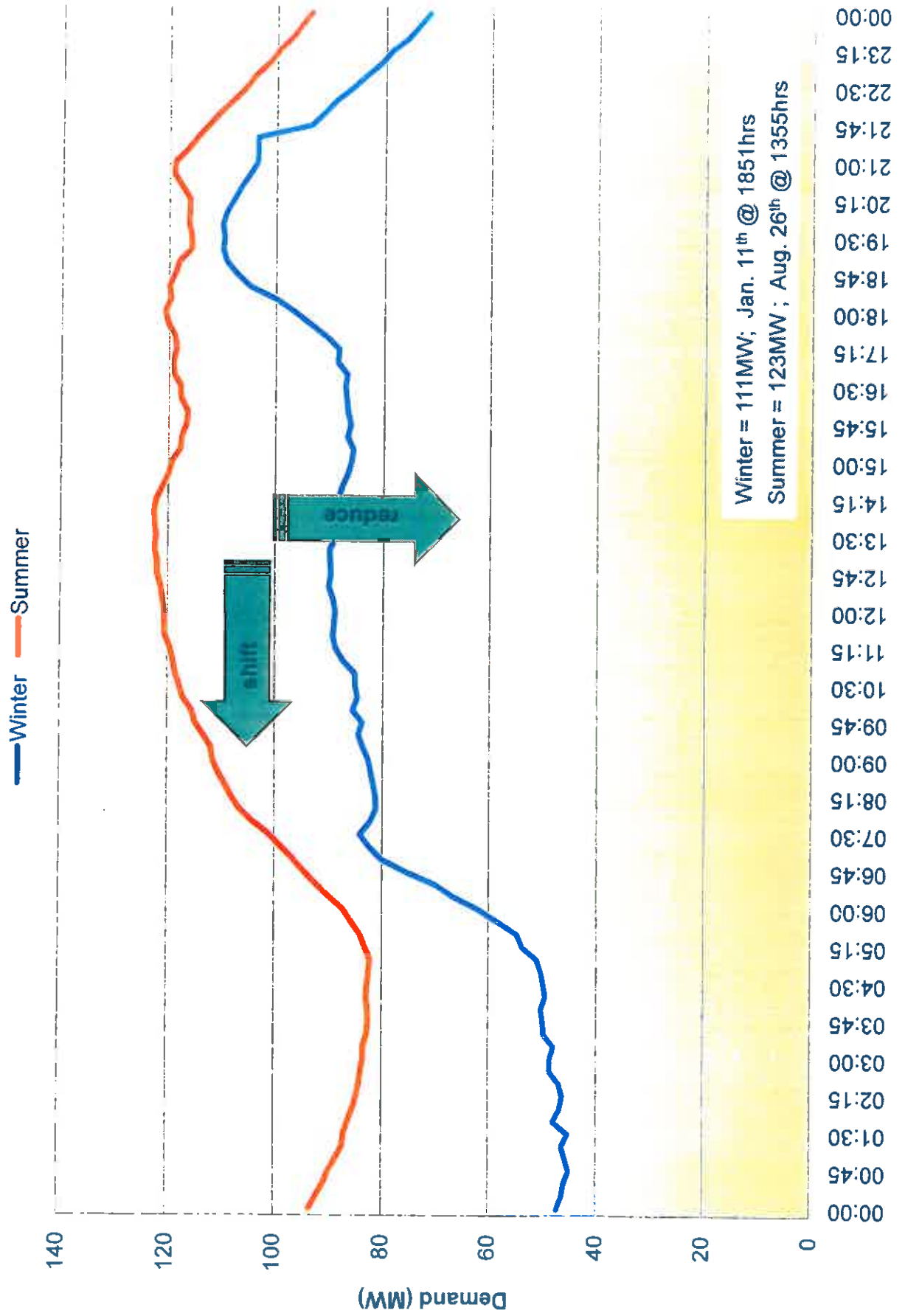
# Where is Electricity Required?

Today

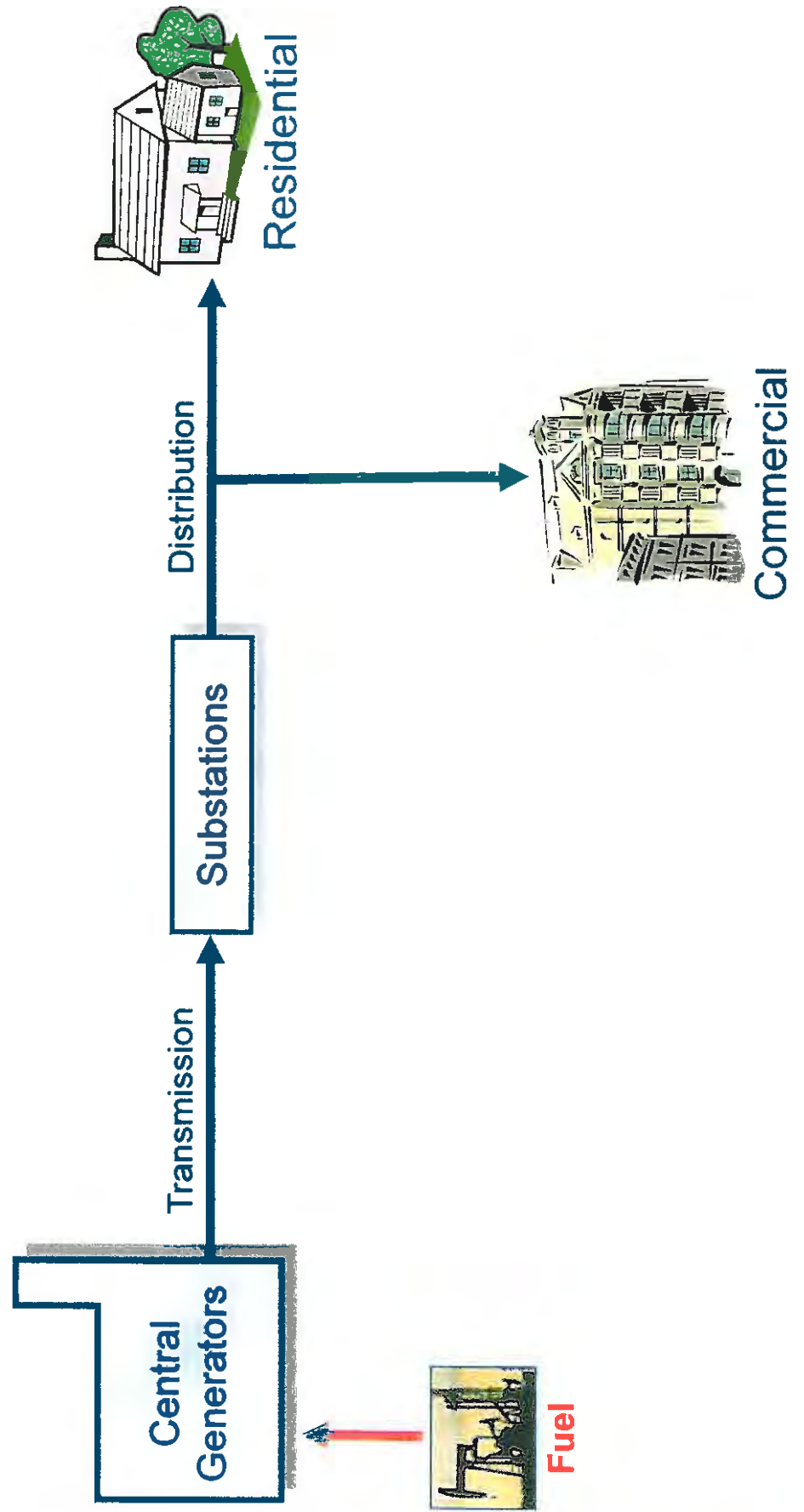




# Bermuda's Demand – Profile & Peaks 2010



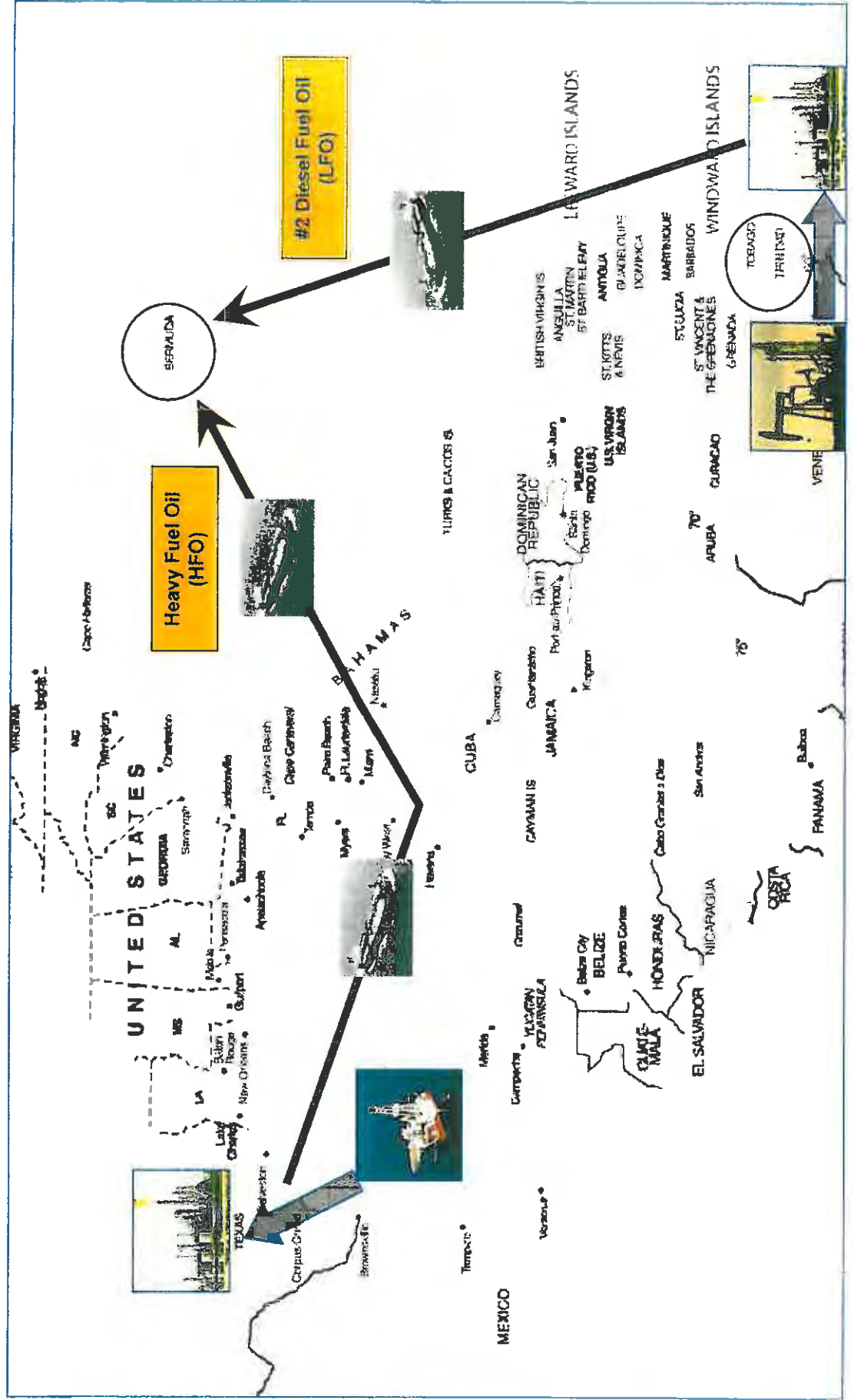
# Electricity Model





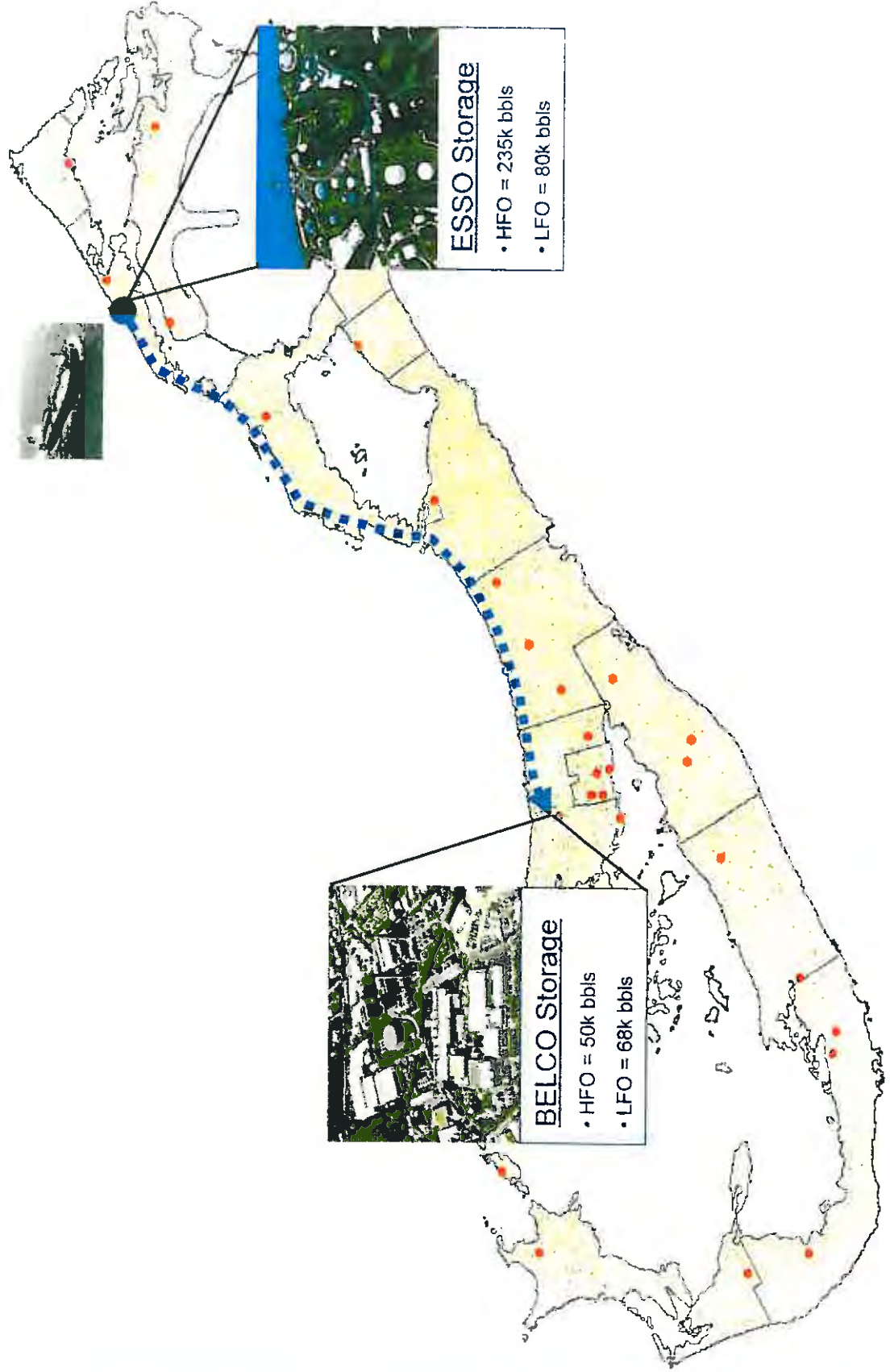
# Fuel - Sources, Refinement & Shipments

- 7 shipments per year (~ 1 shipment every 2 months)
- ~ 1.02 million barrels per year



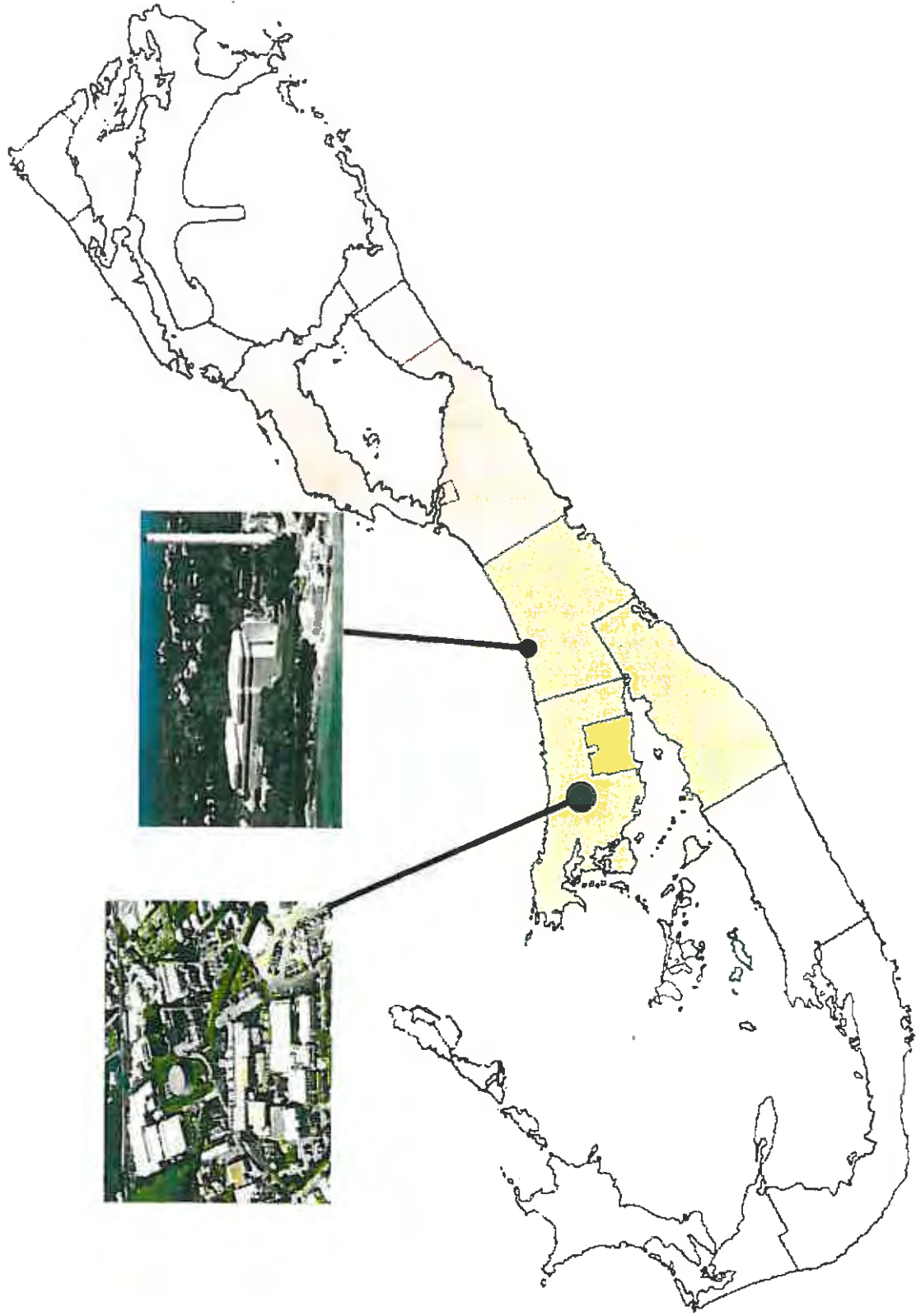
# Fuel - Storage & Delivery

- Single 9 mile pipeline from ESSO to BELCO
- 6 week minimum reserve on island



# Generation - Facilities

- **BELCO = 167 MW Diesel and Gas Turbine Plant**
- **Tynes Bay Waste Treatment Facility = 3 MW Steam Plant**





## 20 Generation Units

### • 13 Diesel Units

- Heavy Fuel Oil
  - East Power Station = 8 Units
- Light Fuel Oil
  - Old Power Station = 5 Units

### • 7 Gas Turbine Units

- Light Fuel Oil
  - West Power Station = 7 Units

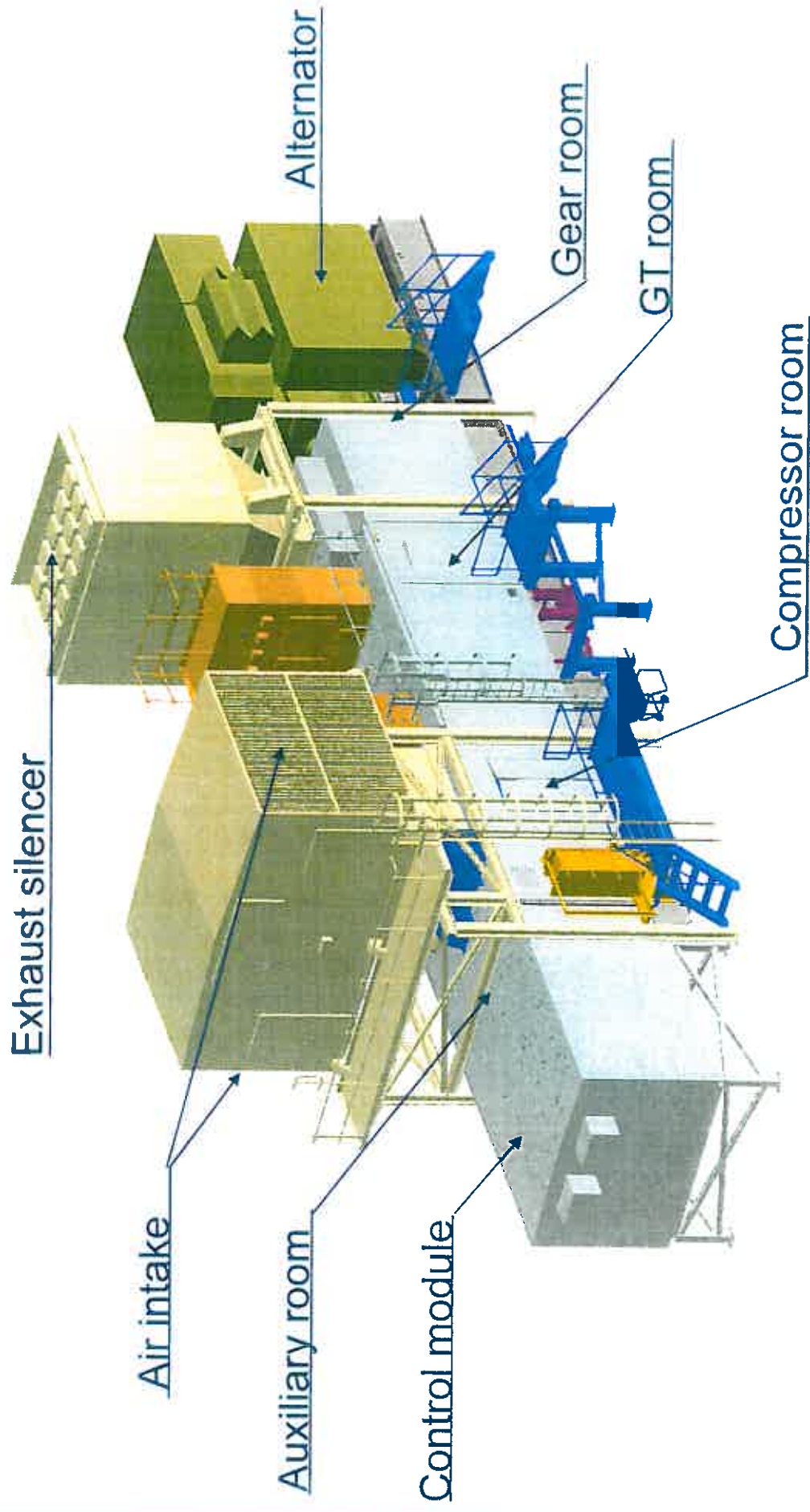
# Electricity Generation – Diesel Plant

- East Power Station E7 Unit – MAN B&W 14.3MW, Medium Speed, V-14 Diesel Engine
- MAN B&W Diesel Group is a world-leader of diesel engine technology
- Diesel generating units offer excellent durability under heavy duty use, the ability to use lower cost fuel oil, high thermal efficiency and proven technology



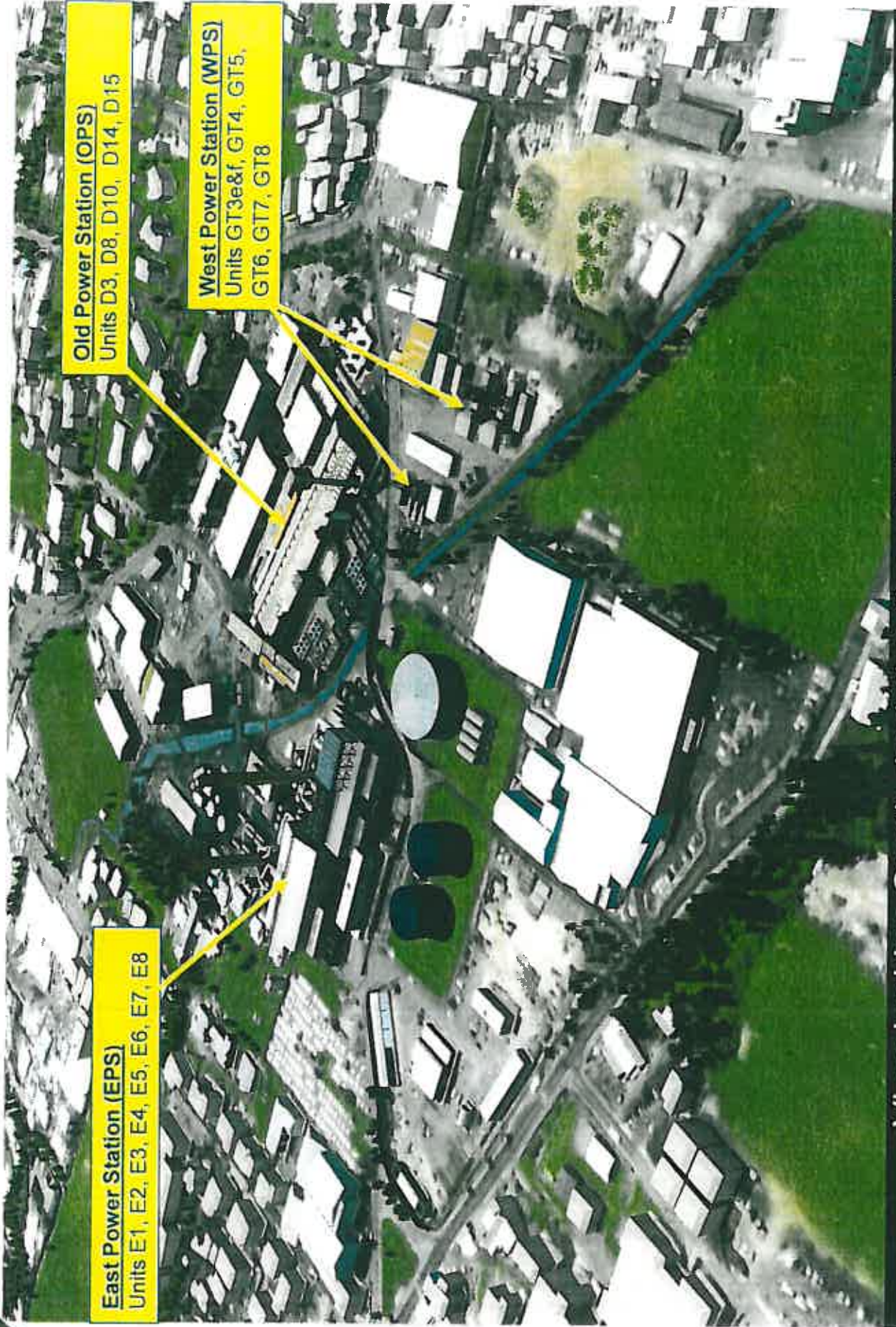


# Electricity Generation – Gas Turbine





# Central Plant - 2010



**East Power Station (EPS)**  
Units E1, E2, E3, E4, E5, E6, E7, E8

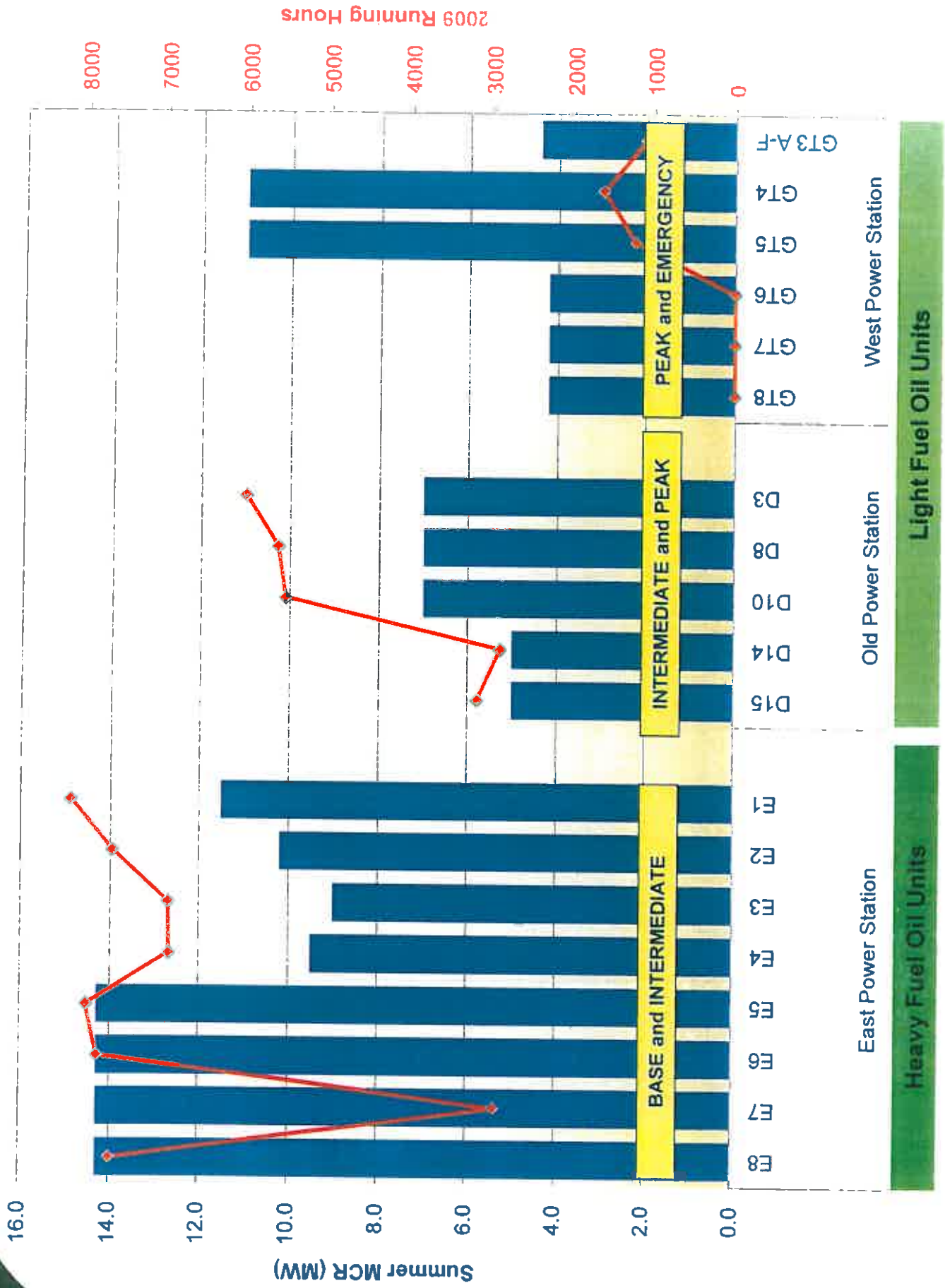
**Old Power Station (OPS)**  
Units D3, D8, D10, D14, D15

**West Power Station (WPS)**  
Units GT3e&f, GT4, GT5,  
GT6, GT7, GT8

View looking South depicting the existing site at 2010



# Generation - Unit Size and Utilisation







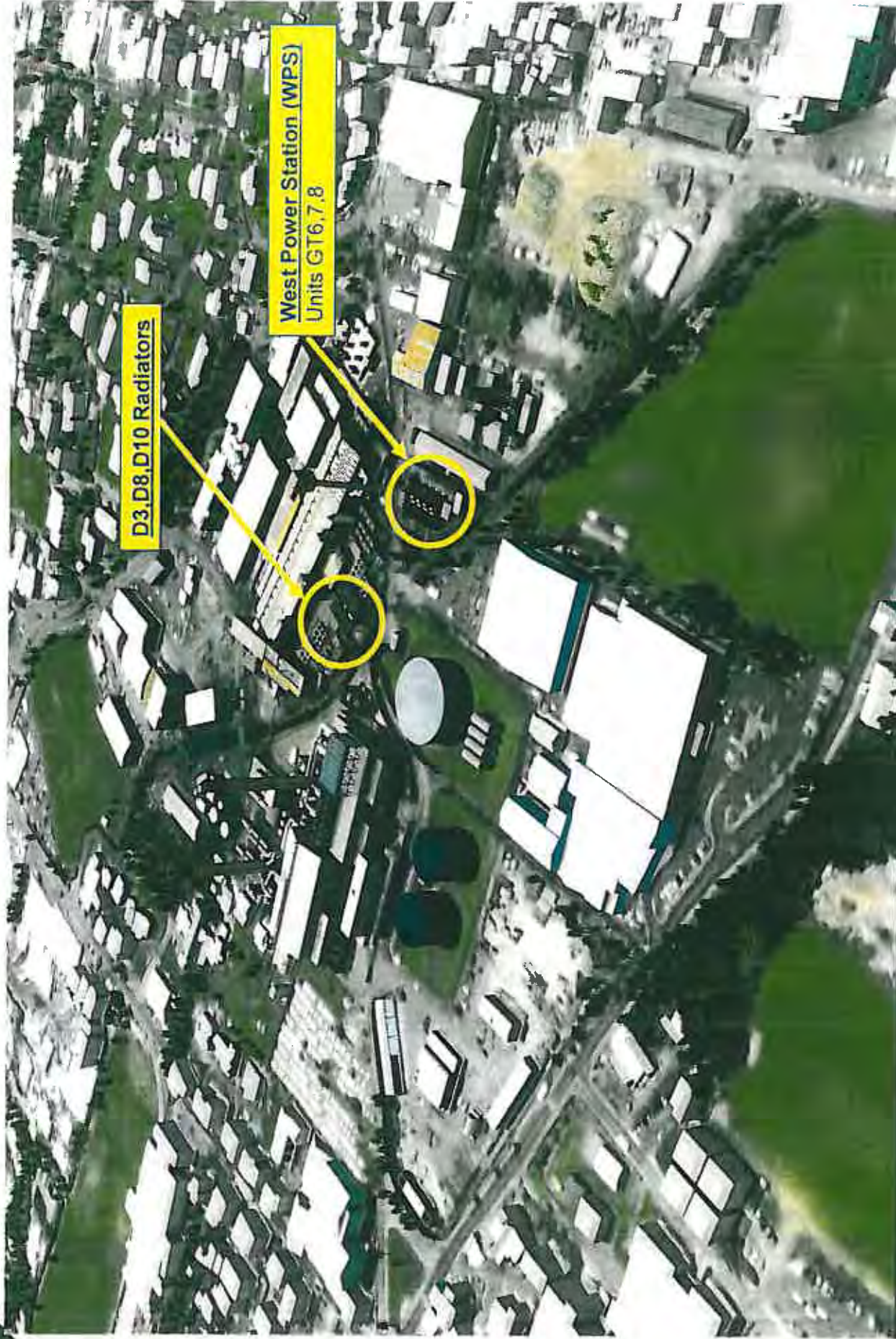
**BELCO**

**Where Are We Now ?**

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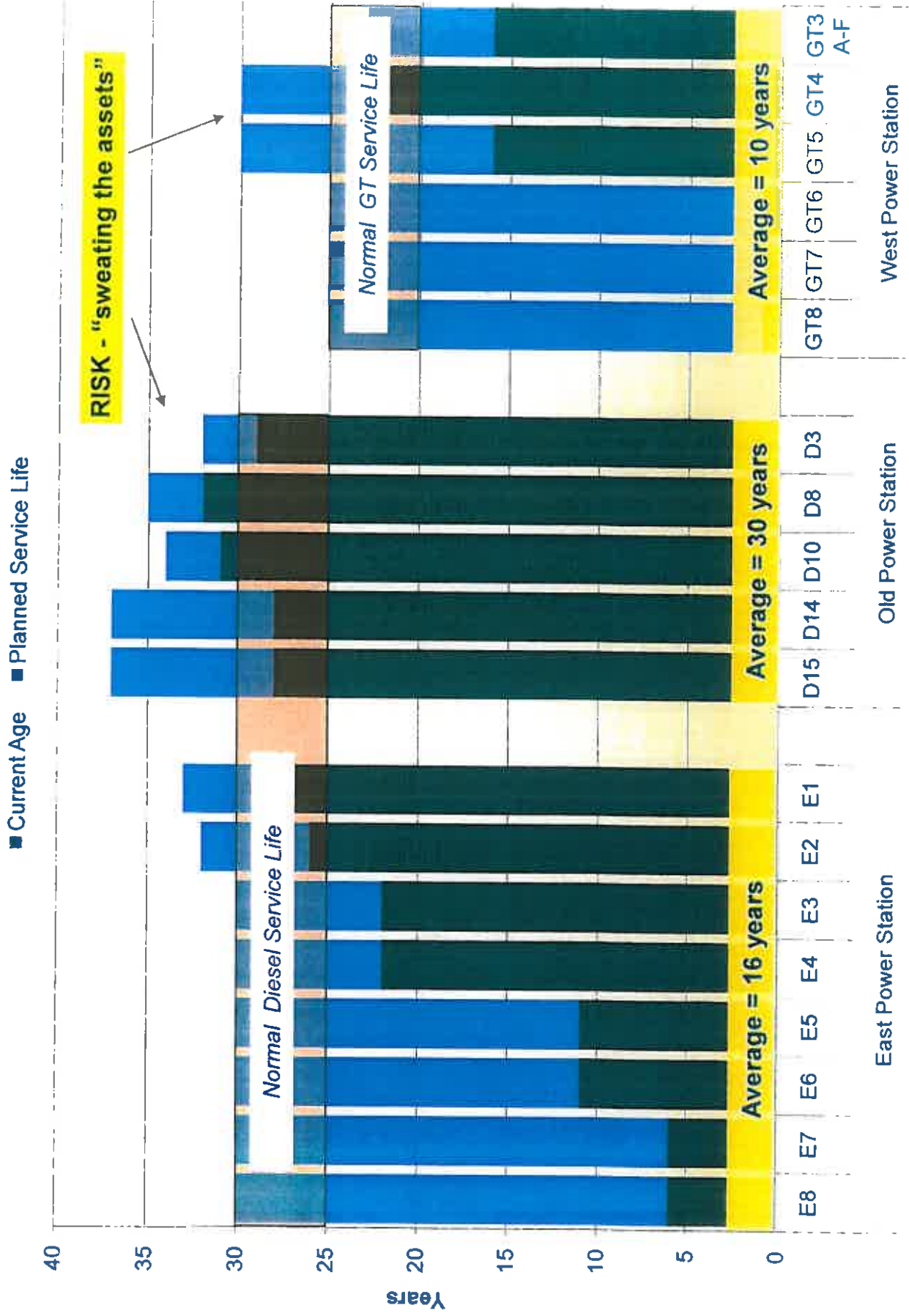
# GT Expansion & OPS Cooling Upgrades



View looking South depicting the existing site at 2007

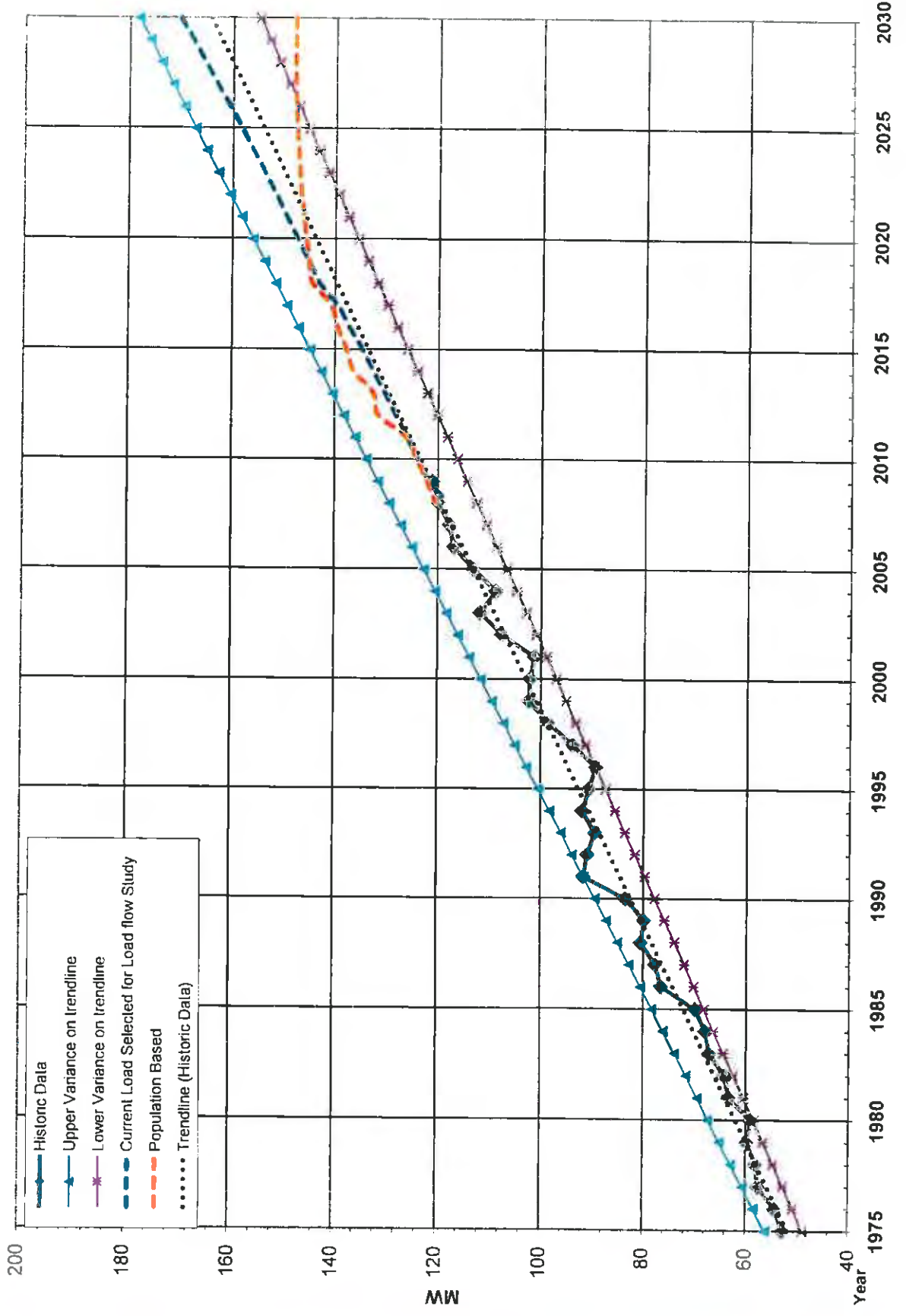


# Aging Generation Assets



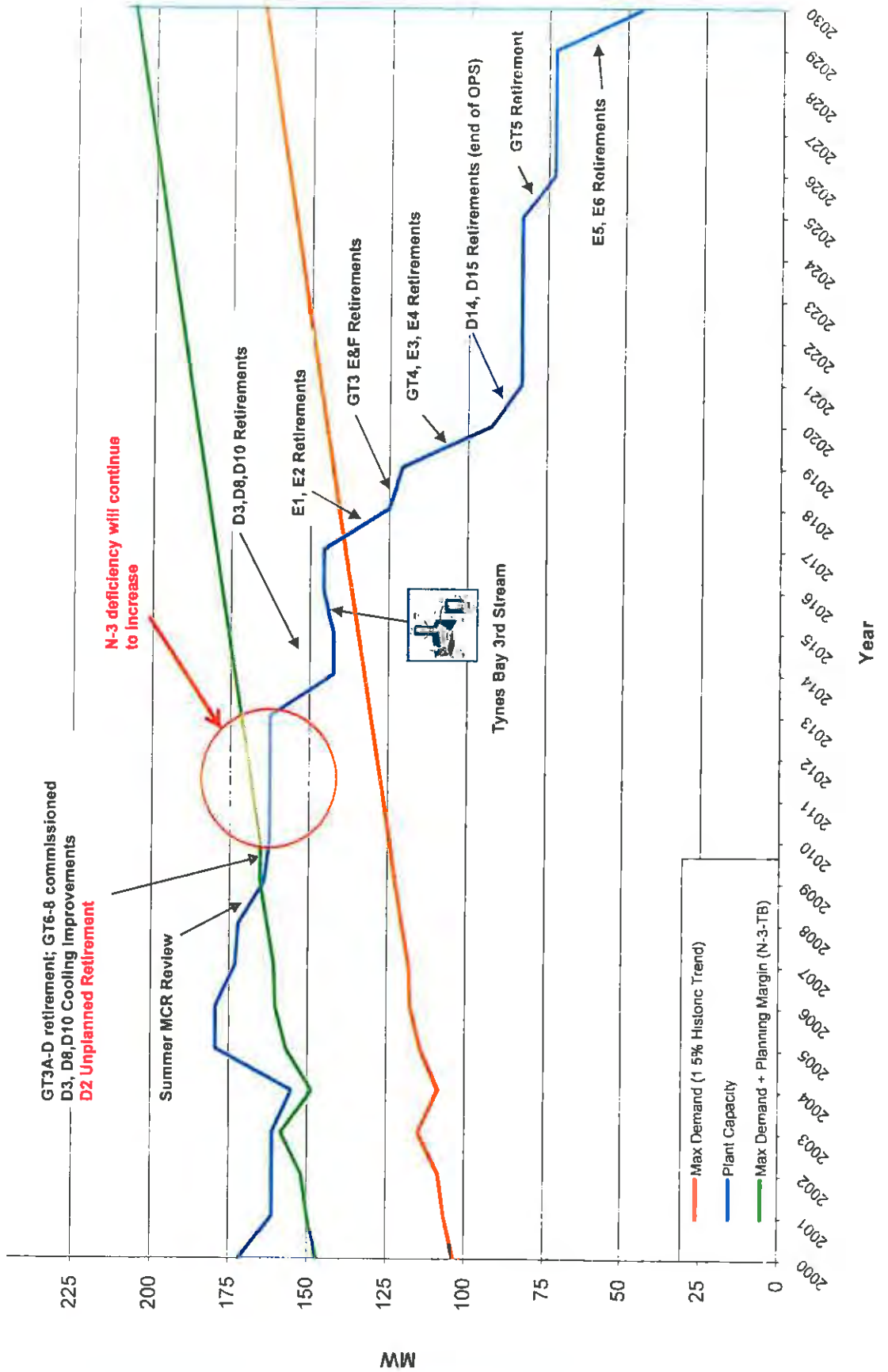
# Demand – “Population Saturation on the Horizon ?”

Summer Eve Load Growth



# Where Are We Now? No More "Plan Bs"

## Generation Plant Capacity Vs Demand



The logo consists of the word "BELCO" in a bold, serif font, colored in a dark green. It is set against a white background that has a fine, vertical-line texture. This white background is part of a larger green graphic element that resembles a metal bracket or a piece of machinery with a circular hole on the left side.

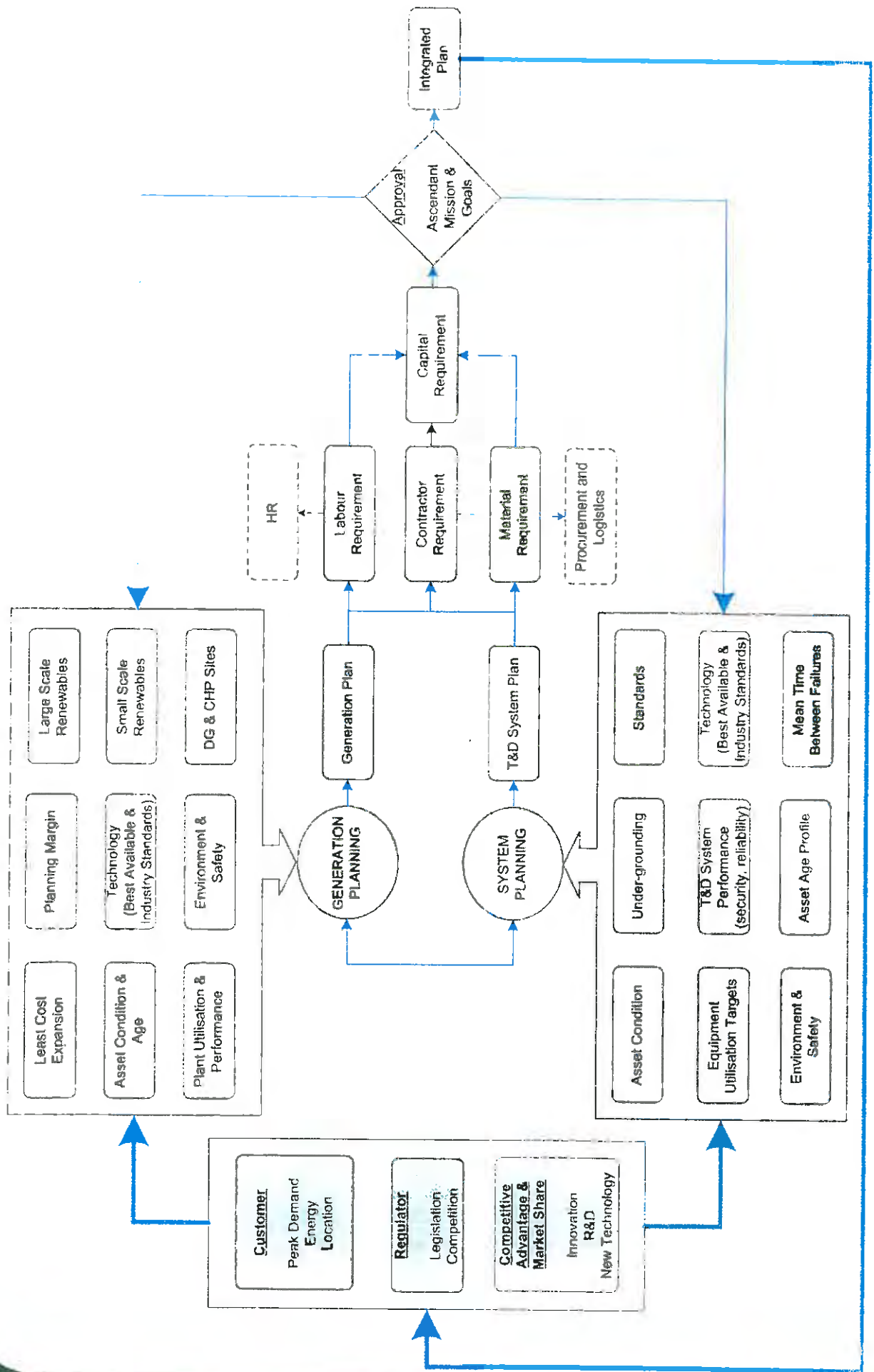
**BELCO**

2013 & Beyond

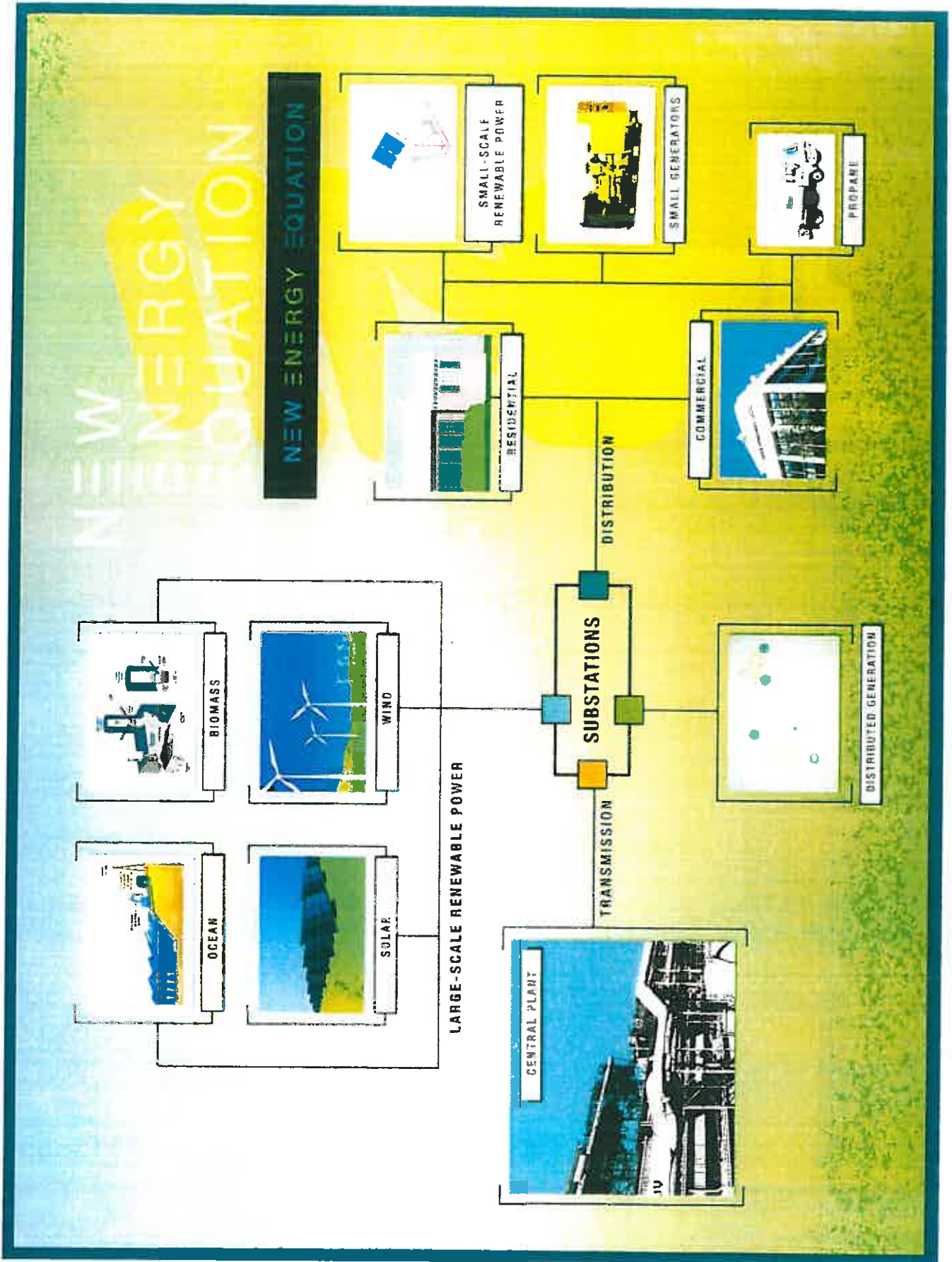
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# Integrated Resource Planning (IRP) Process



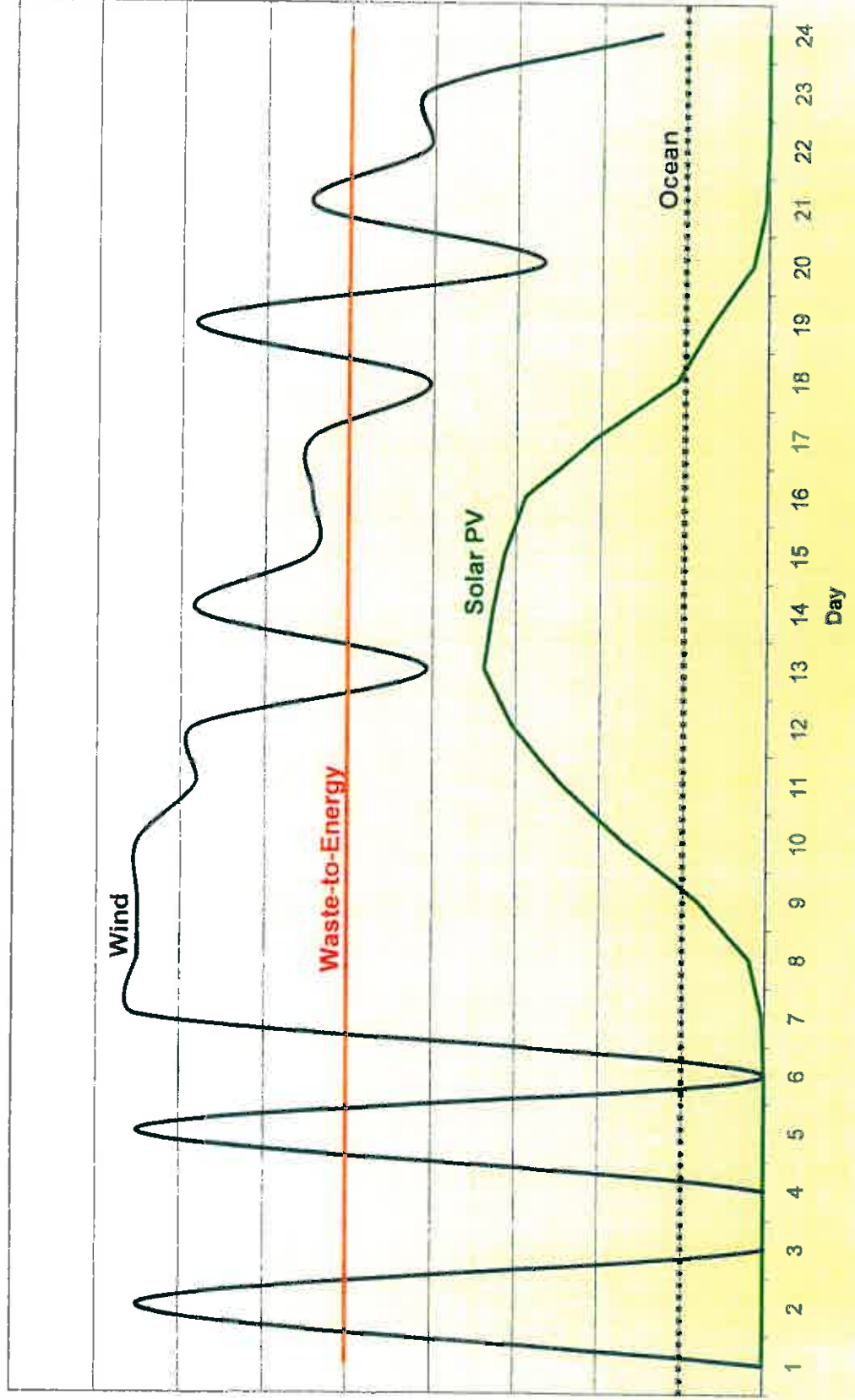
# The New Energy Equation





# LSRE - Firm Versus Intermittent Renewables

## Firm Versus Intermittent Renewables



# Large Scale Renewable Energy (LSRE) - SOI Proposals



Plasco

Waste-to-Energy  
(Municipal Waste)



Intrinity

Waste-to-Energy  
(Wood Biomass)



Triton/REH

Ocean  
(Wave)



RES

Solar  
(Photovoltaic)



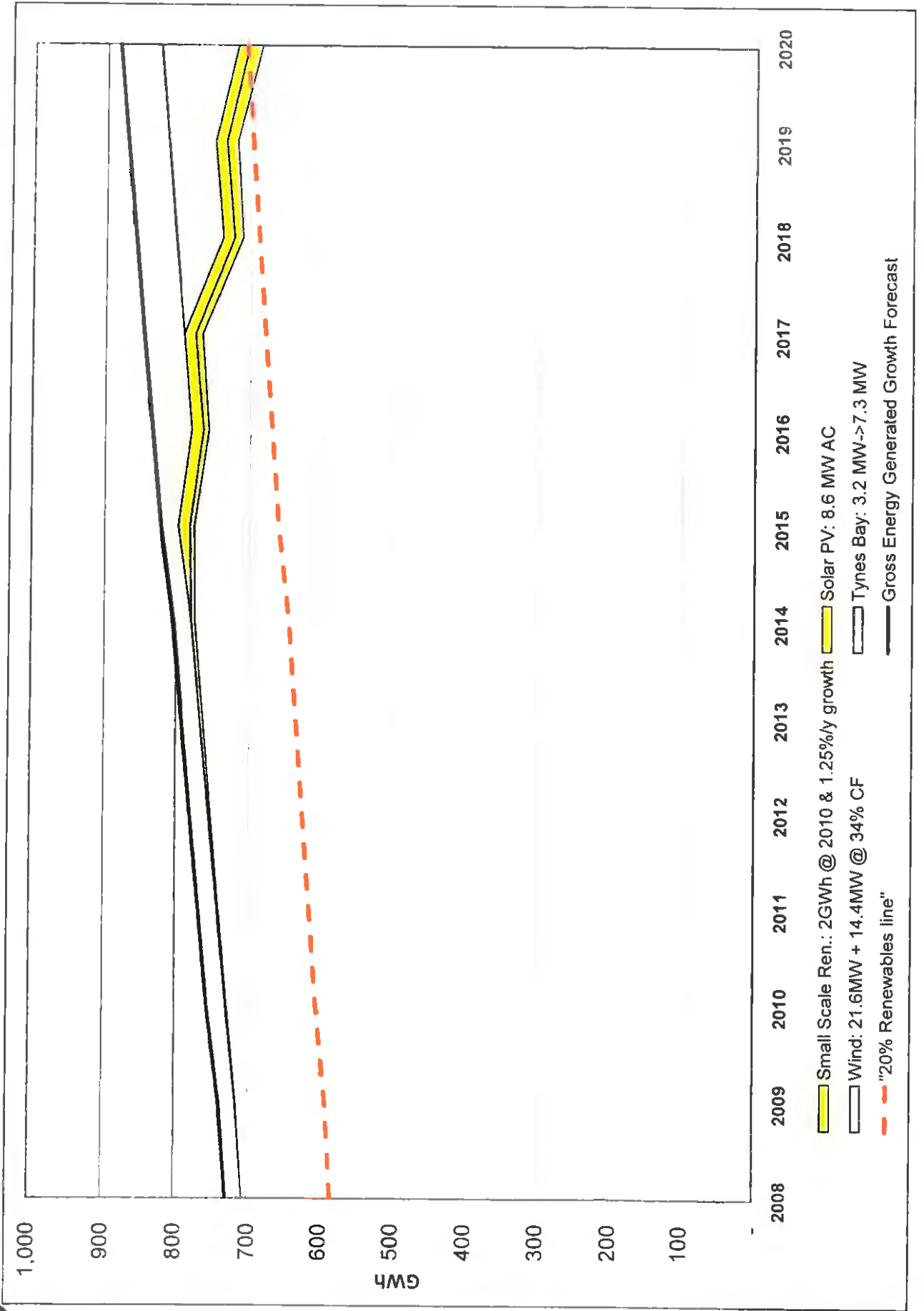
IPC

Wind  
(Offshore)

March 31<sup>st</sup> 2009

April 7<sup>th</sup> 2009

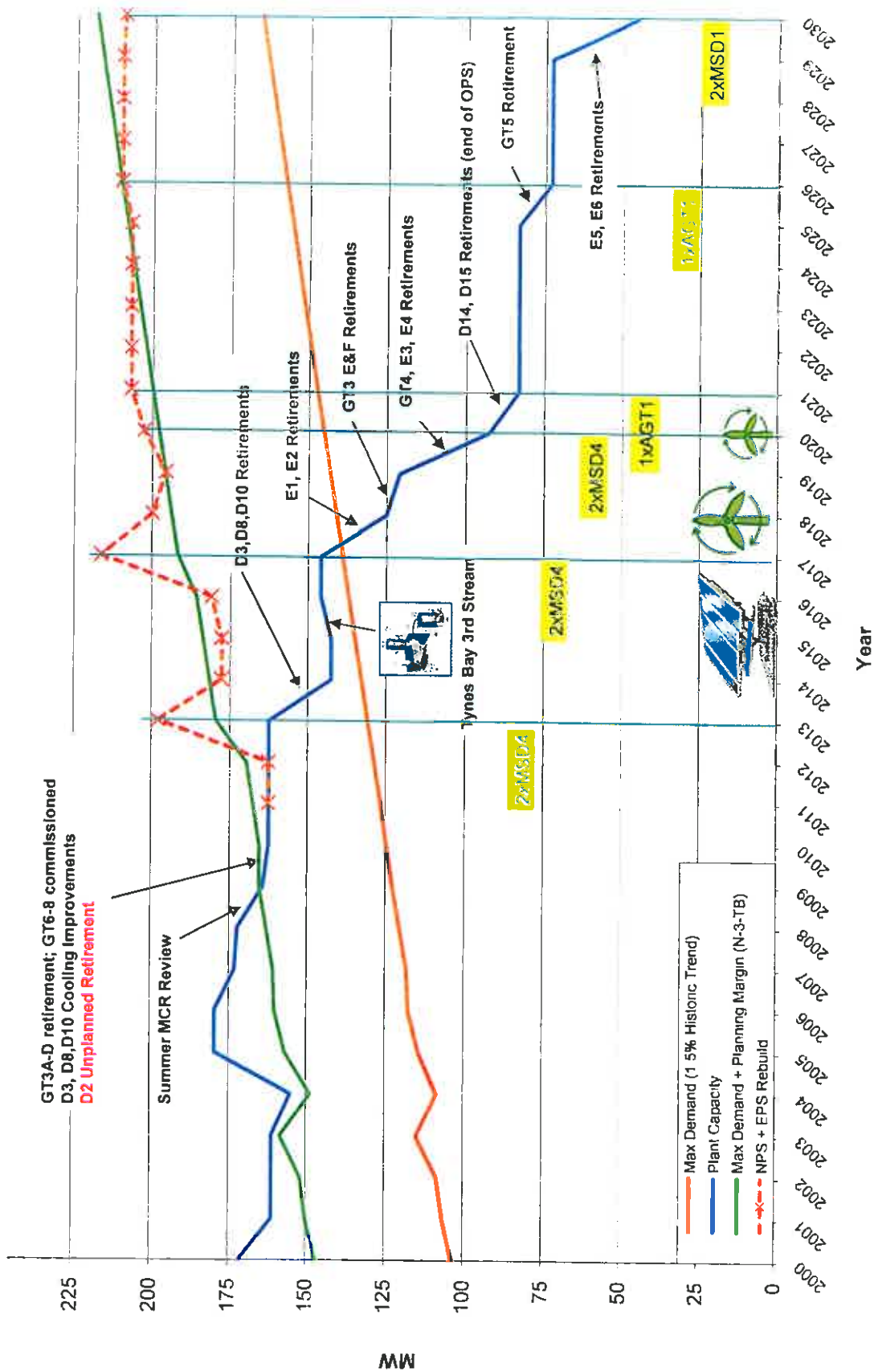
# New Energy Equation – Energy Vs Renewable Target





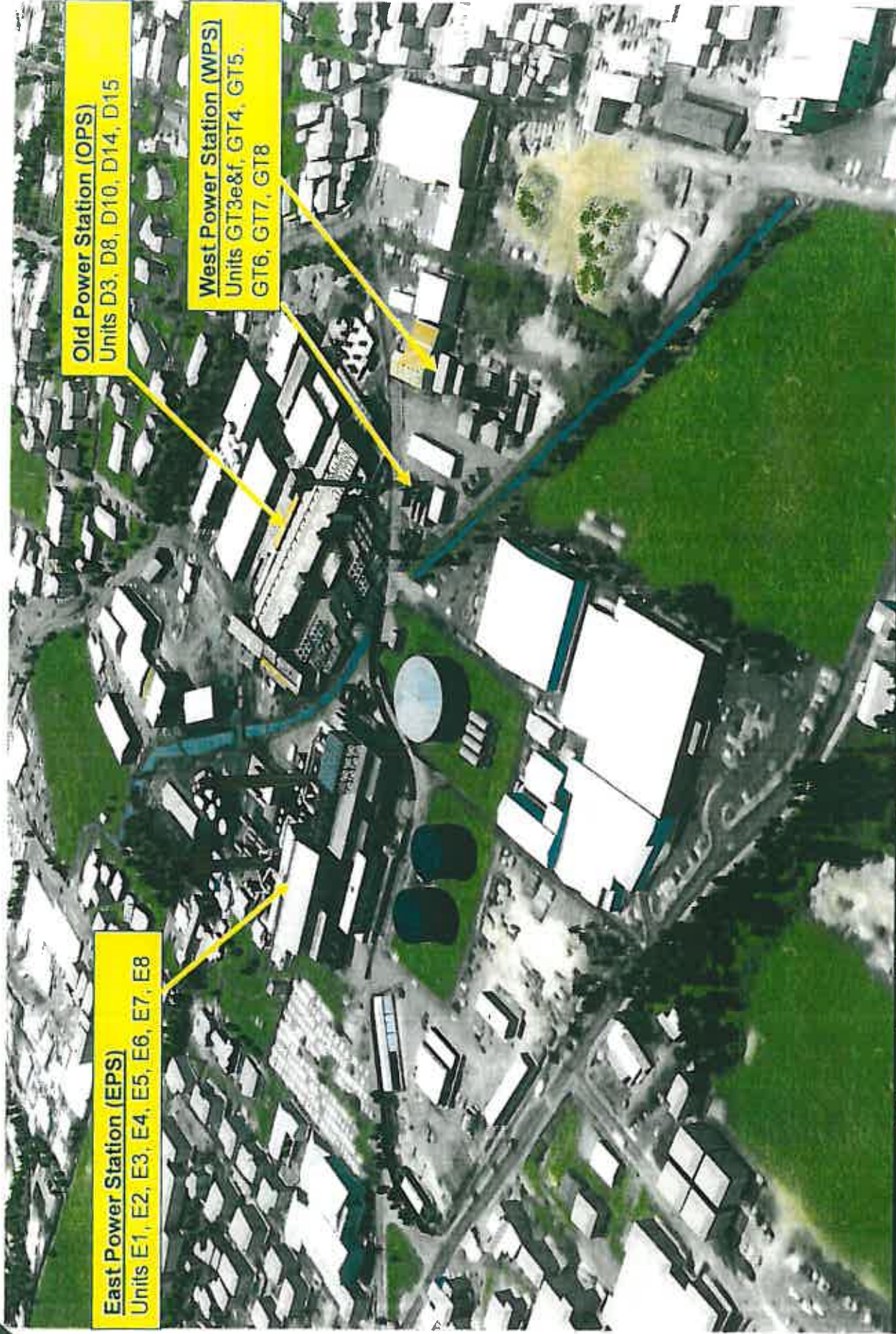
# New Energy Equation Plan – Capacity vs Demand

Generation Plant Capacity Vs Demand





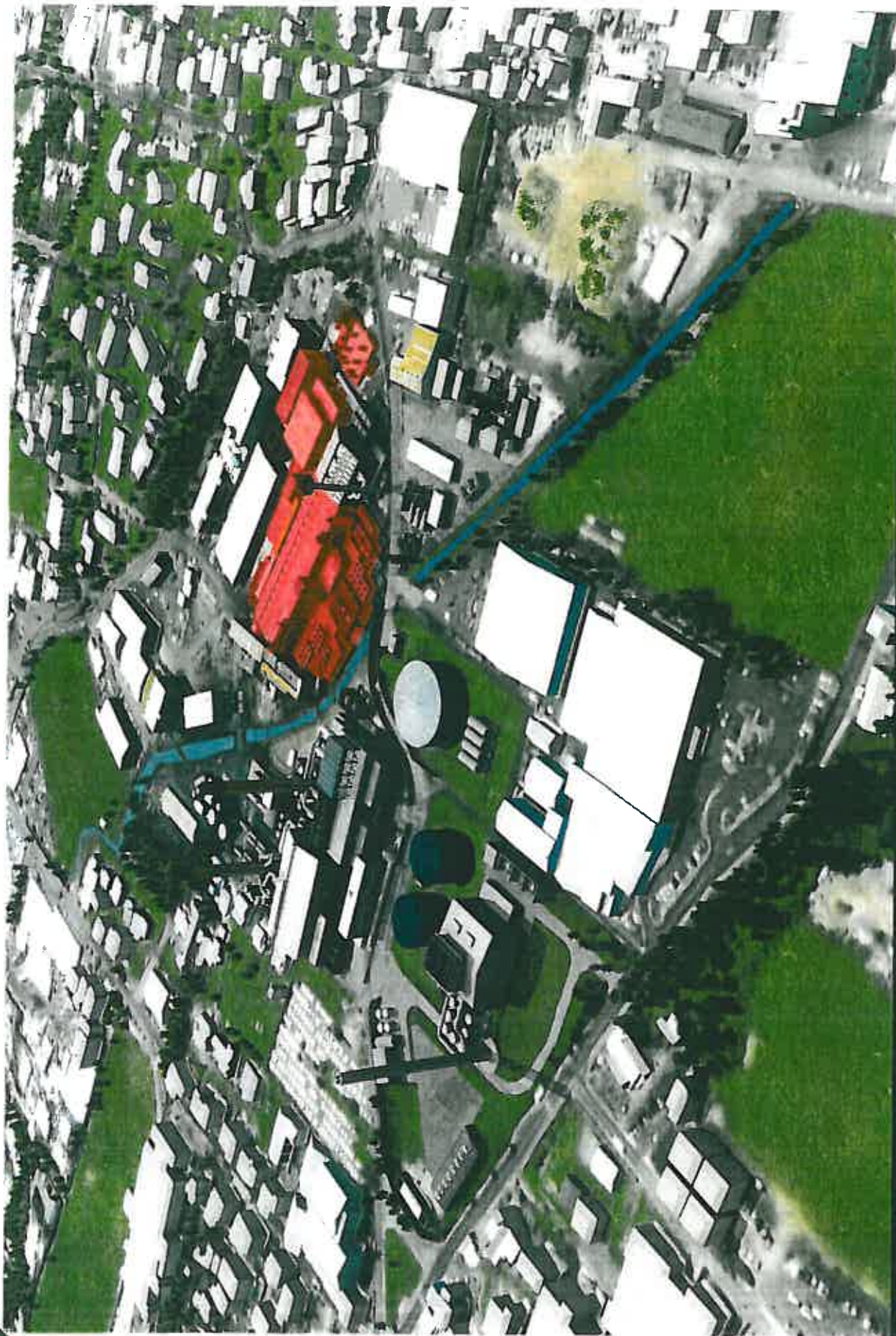
# Central Plant Development Plan - 2010



View looking South depicting the existing site at 2010



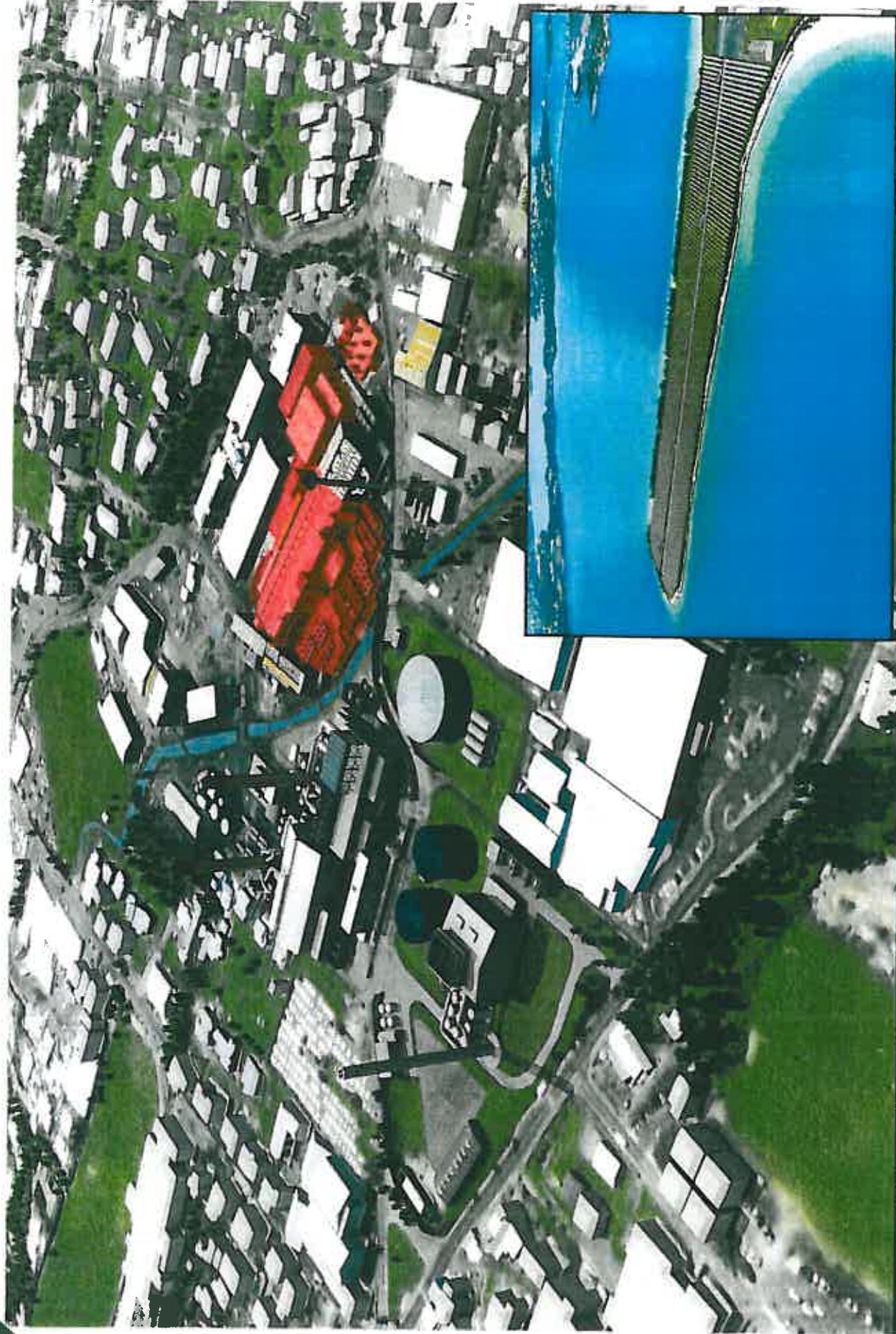
# Central Plant Development Plan - 2013



View looking South depicting the staged development at 2013



# Central Plant Development Plan - 2015



View looking South depicting the staged development at 2015

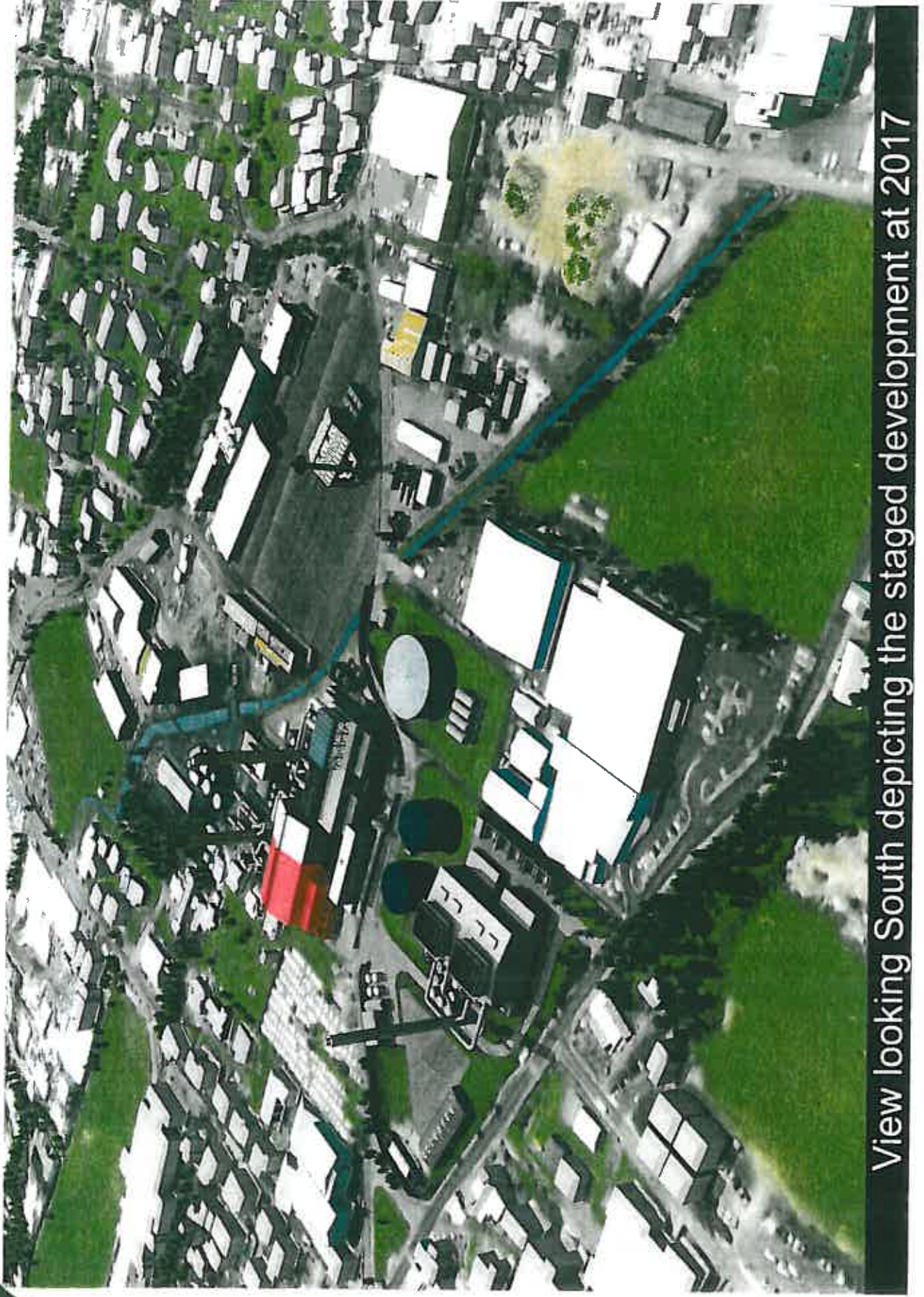


# Solar Development "The Finger" 2015



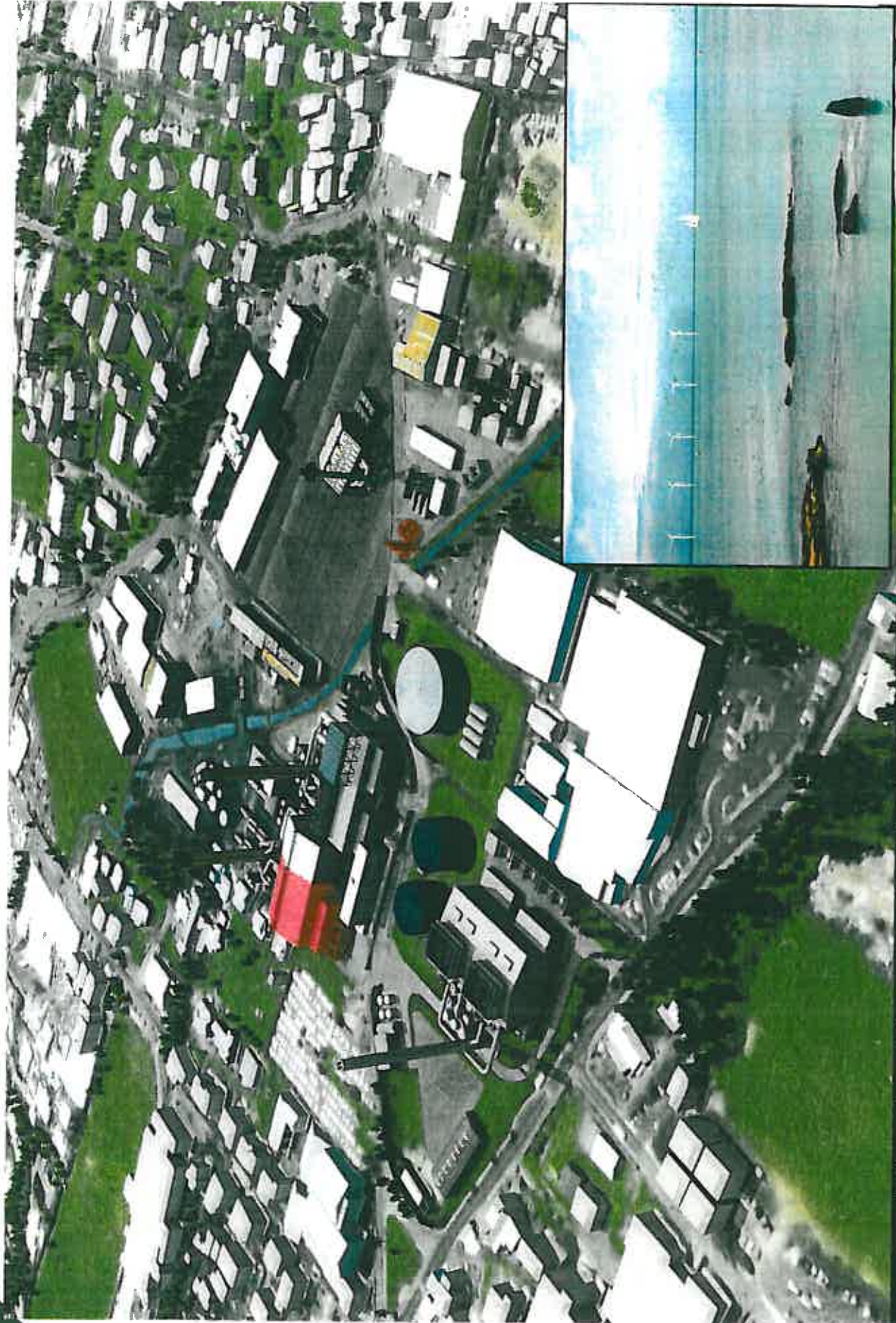


# Central Plant Development Plan – 2017



View looking South depicting the staged development at 2017

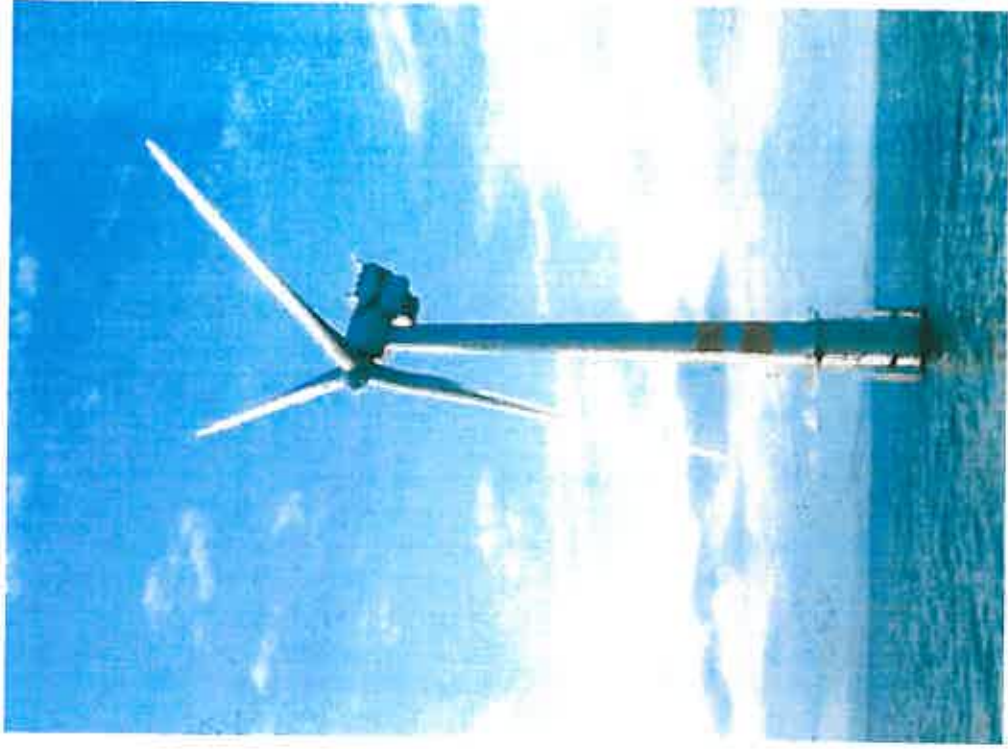
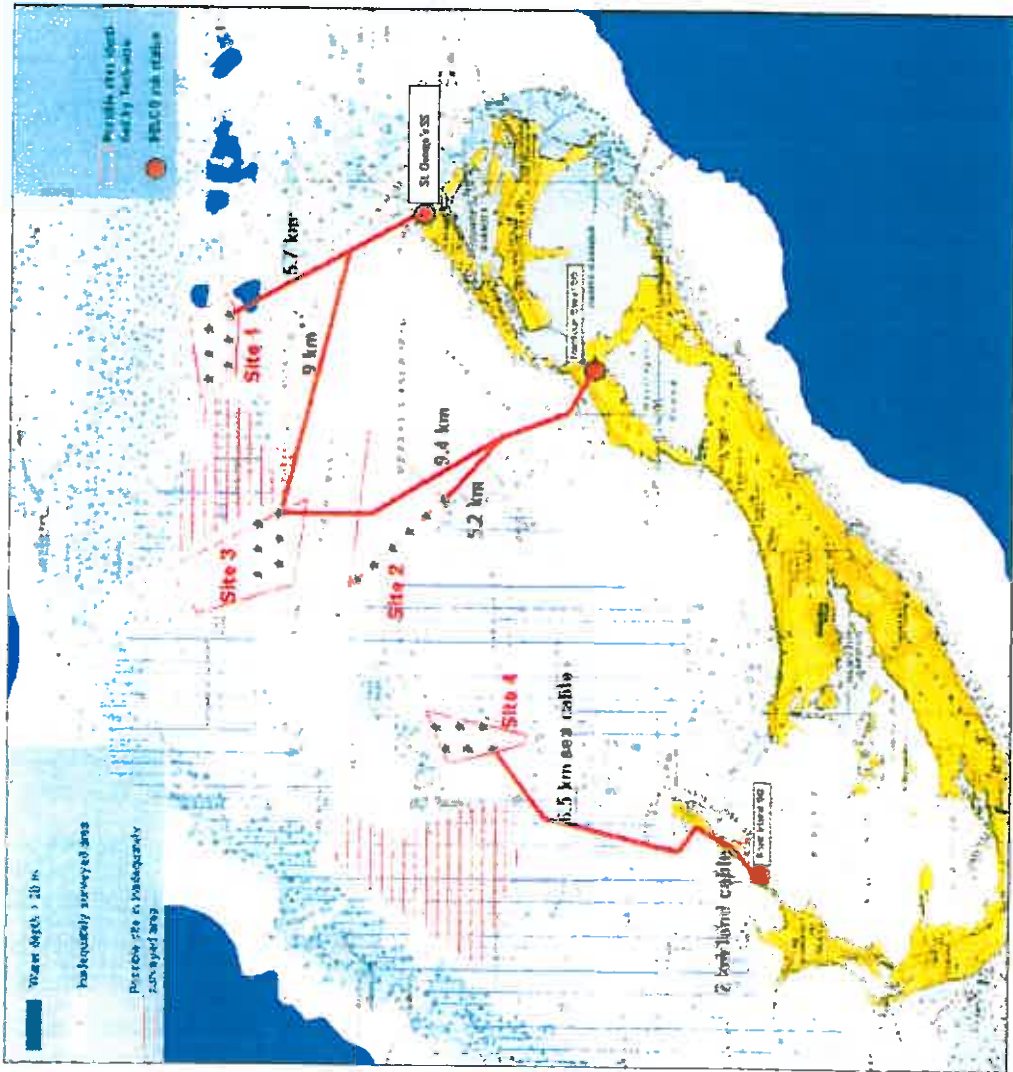




View looking South depicting the staged development at 2018

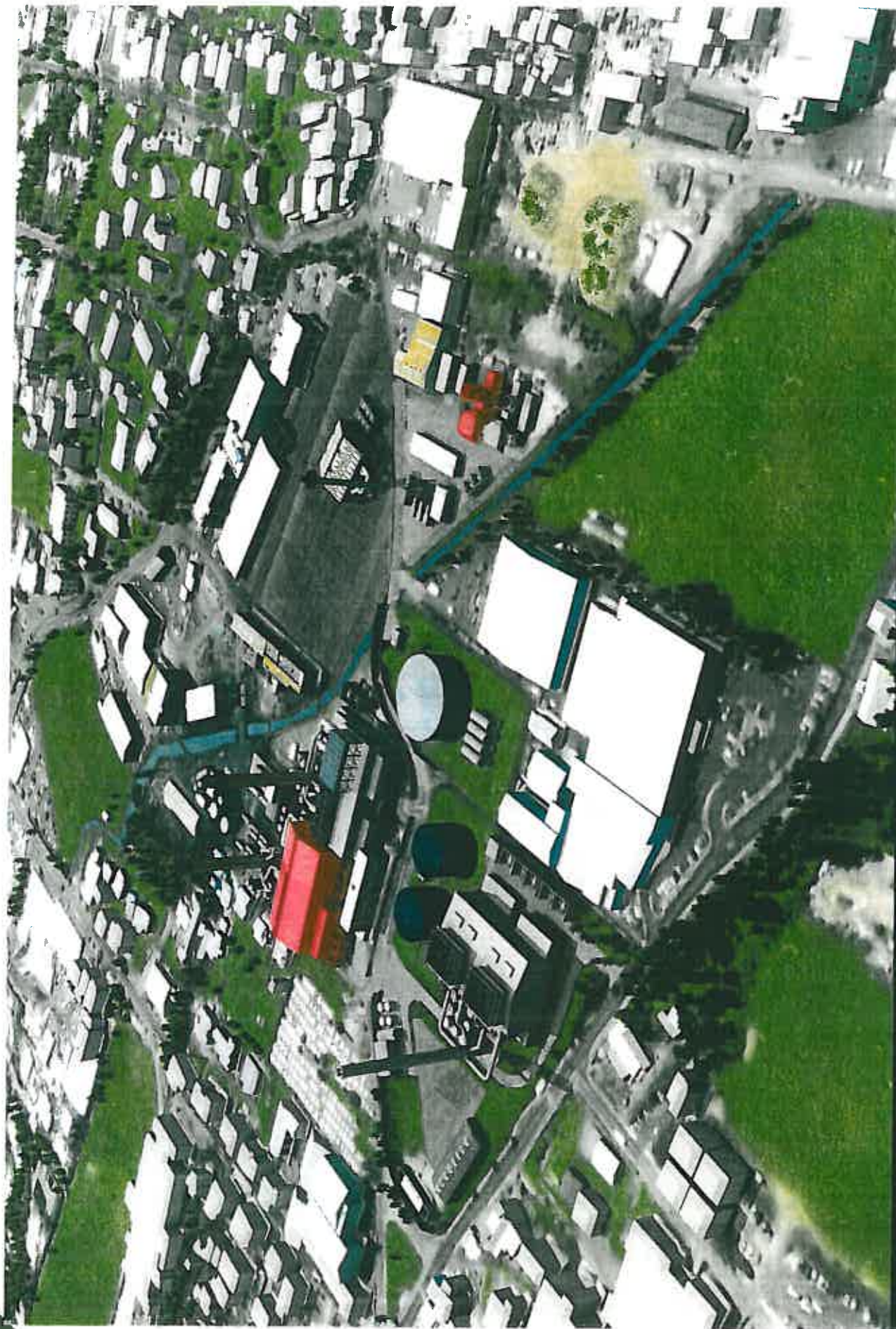


# Wind Development 2018 & 2020



- General Electric (GE) 3.6 MW turbine specifically developed for offshore use.
- Hub height above water level between 80 and 90 m and a rotor diameter of 104 m meaning that the distance from water level to the upper blade tip will be in the order of 140 m.

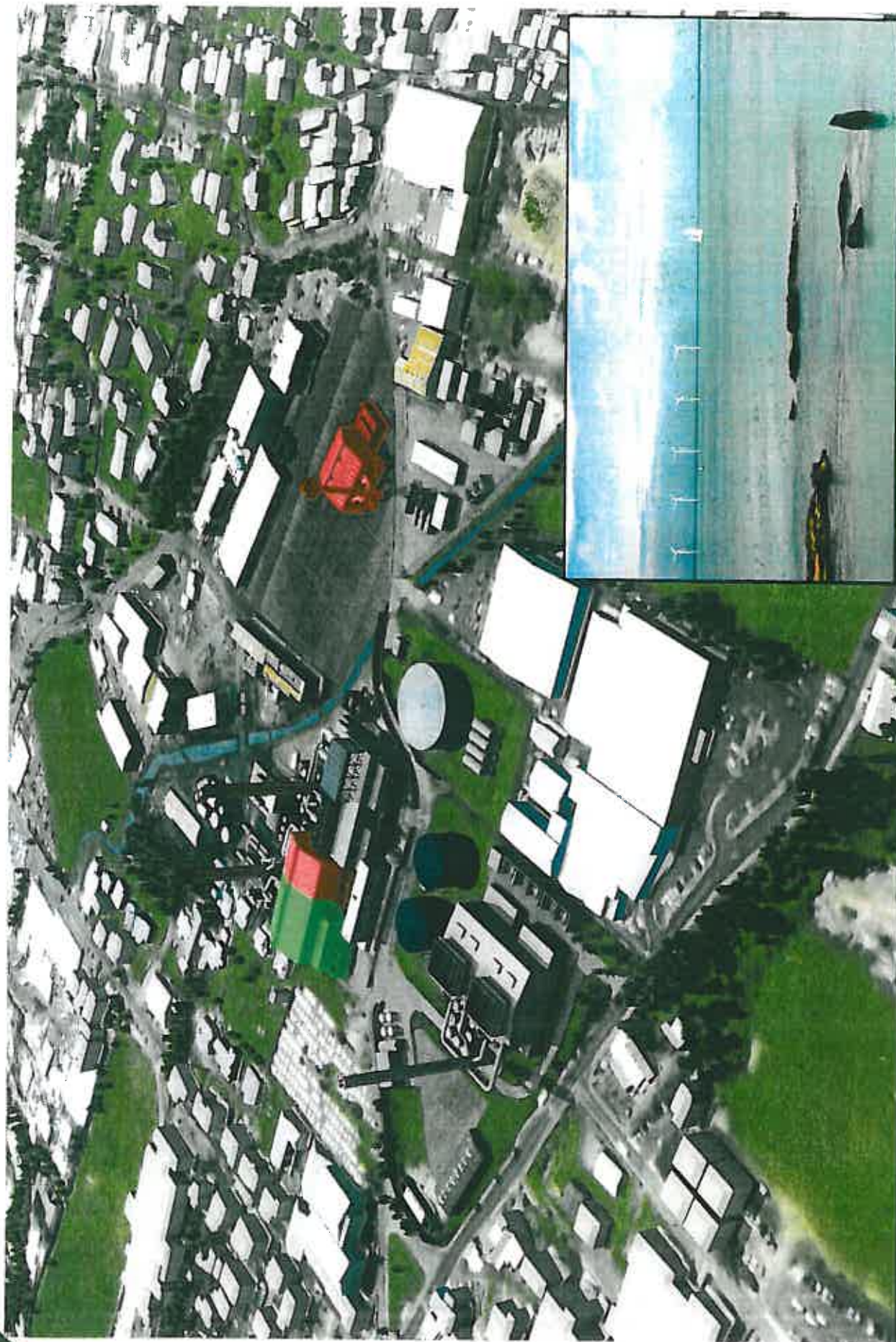




View looking South depicting the staged development at 2019



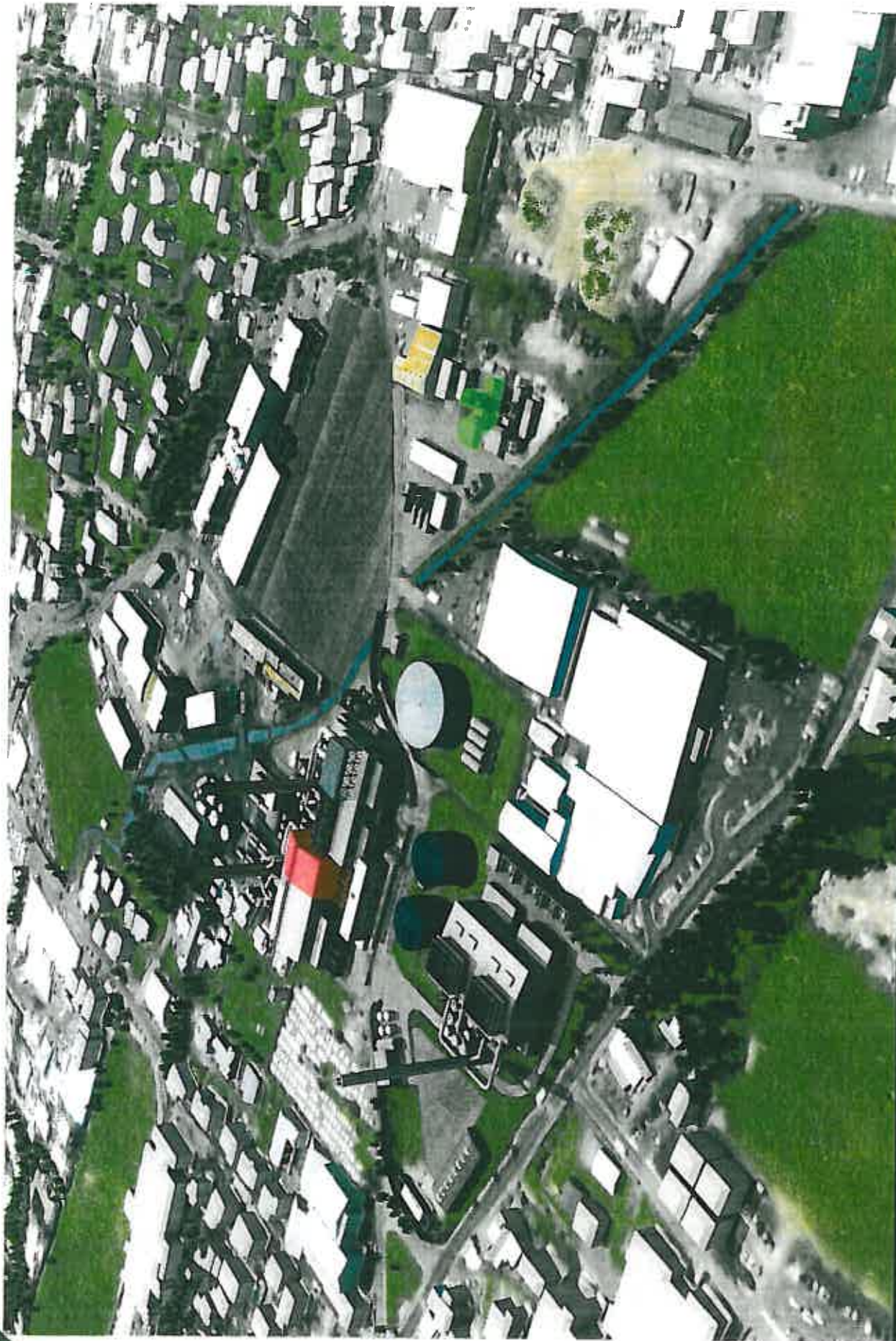
# Offshore Wind Development – 2020



View looking South depicting the staged development at 2020



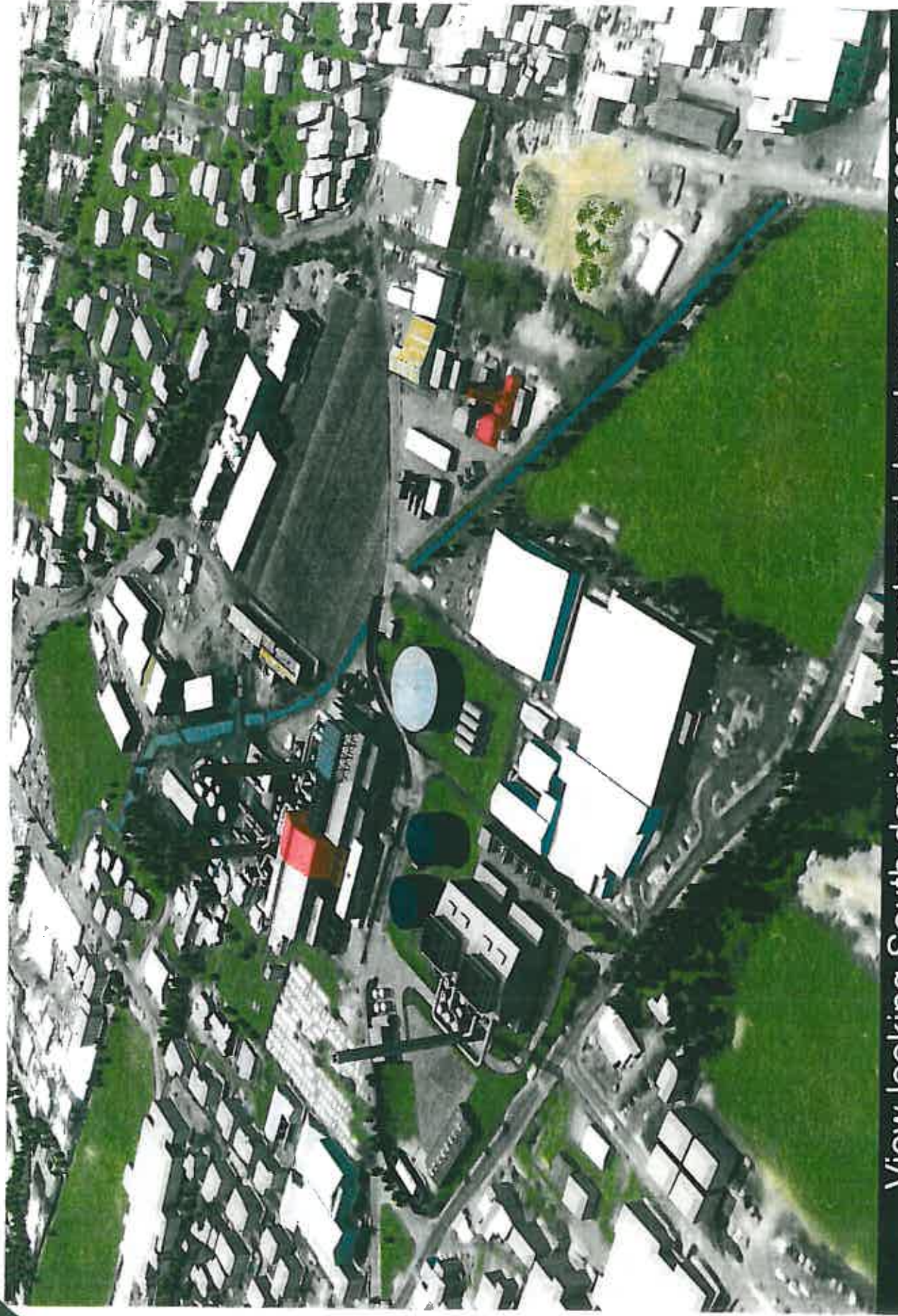
# Central Plant Development Plan - 2021



View looking South depicting the staged development at 2021



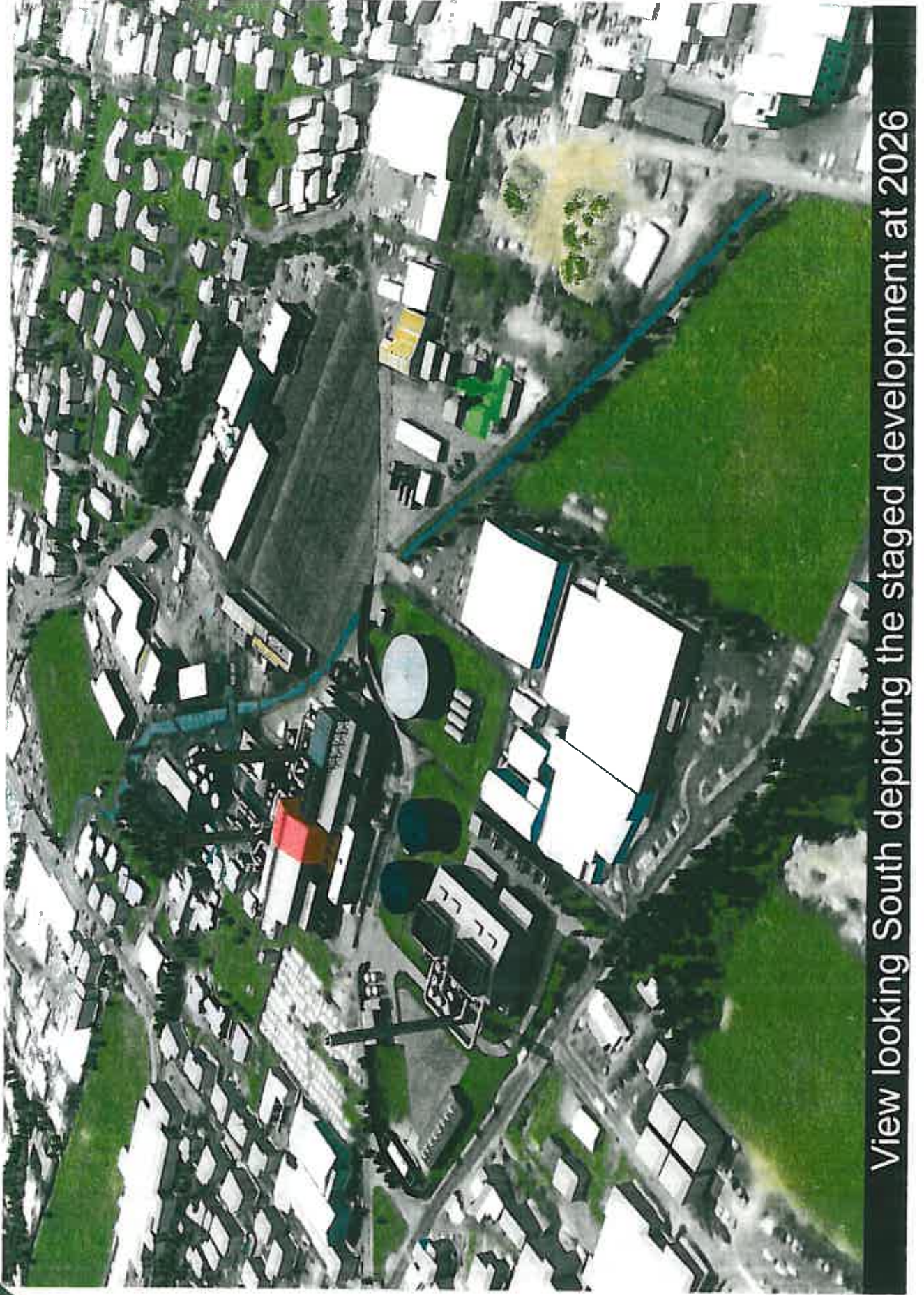
# Central Plant Development Plan - 2025



View looking South depicting the staged development at 2025



# Central Plant Development Plan - 2026



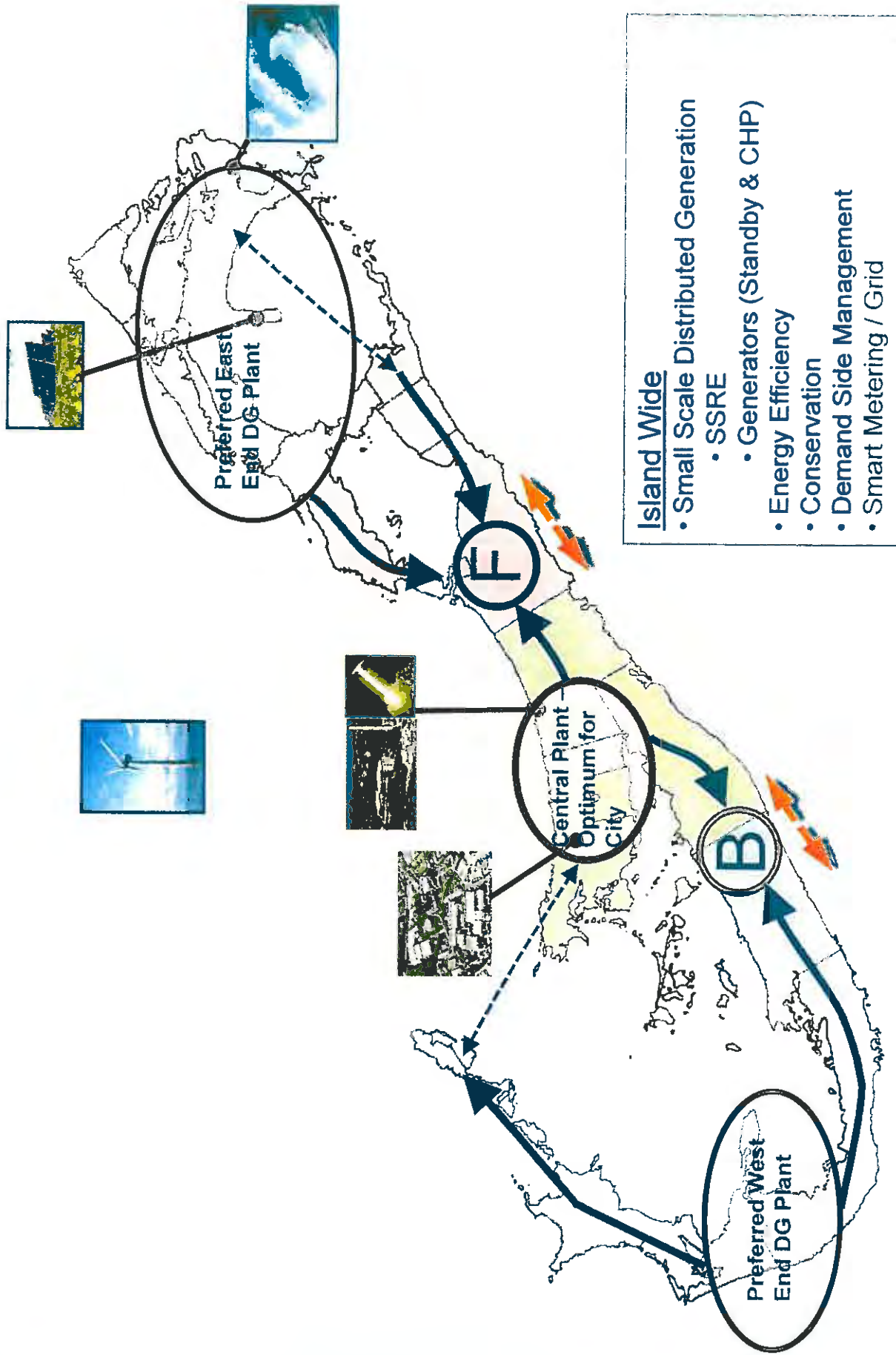
View looking South depicting the staged development at 2026



# ● North Power Station – Key Points

- The first phase of the new diesel power station must be commissioned by **May 2013**.
- Government approvals must be obtained by **May 1<sup>st</sup>, 2011**.
- The need for new diesel plant is primarily driven by the essential and imminent retirement of the Old Power Station which has the highest environmental impact.
- Intermittent Renewable Energy Sources are incapable of replacing retired diesel plant at this time.
- The Central Power Plant is the only site available for a diesel power station development at this time.

# New Energy Equation - Geographically



- Island Wide**
- Small Scale Distributed Generation
  - SSRE
  - Generators (Standby & CHP)
  - Energy Efficiency
  - Conservation
  - Demand Side Management
  - Smart Metering / Grid



**BELCO**

Any Questions?

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