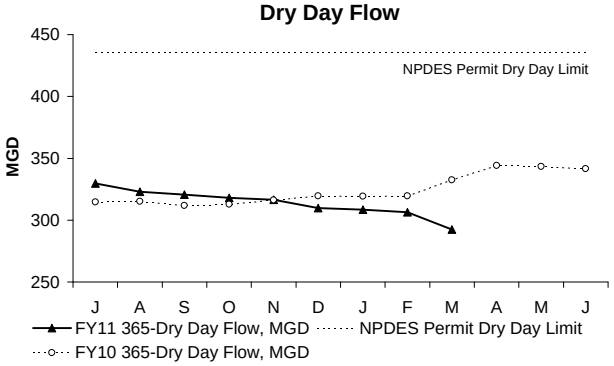
Massachusetts Water Resources Authority
Deer Island Treatment Plant Performance
March 2011

Dry Day Flow



Dry Day Flow is calculated by averaging influent flows over the previous 365 days during dry weather. The Dry Day Flow during the 3rd Quarter of FY11 was below the permit limit.

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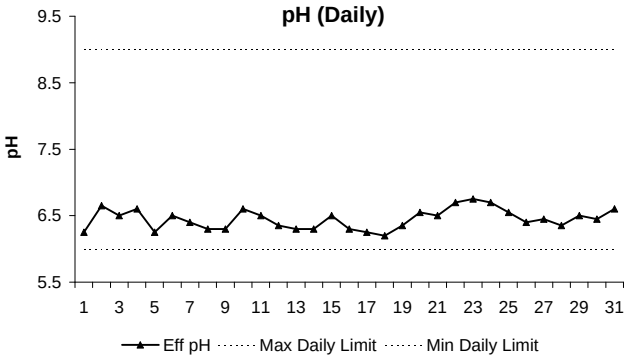
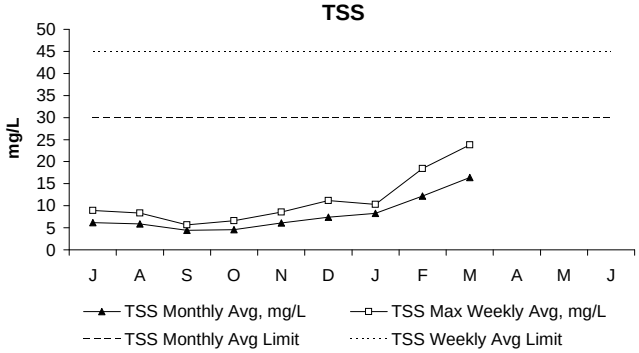
pH (Daily)



pH is a measure of the acidity or basicity of the effluent. Small fluctuations in pH do not have an adverse effect on marine environments. Because pure oxygen is used in the activated sludge reactors, the effluent pH tends to be at the lower range.

pH measurements for the 3rd Quarter of FY11 were fairly typical for the season and within permit limits, similar to those represented above for the month of March.

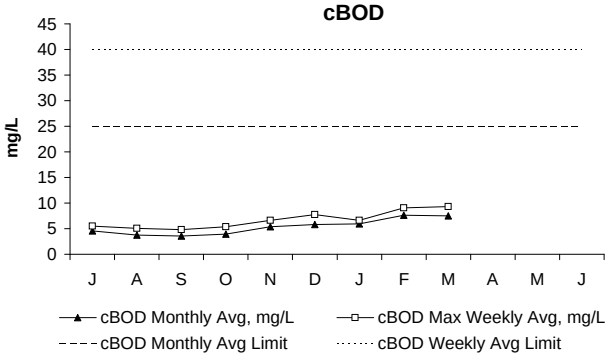
TSS



In the 3rd Quarter of FY11, both the weekly and monthly concentrations of TSS were below permit limits and within the expected ranges for the season.

TSS typically trend slightly higher in the winter months due to slower settling as a result of the wastewater being denser and also because plant flow in late winter are on average slightly higher due to rain and snowmelt. The TSS Max Weekly and Monthly Averages for February and March are slightly higher due to poorer settling resulting from high plant flows as several heavy rainstorms passed through the region triggering eight (8) separate blending events during these two (2) months. TSS, or Total Suspended Solids in the effluent, is a measure of the amount of solids that remain suspended after treatment.

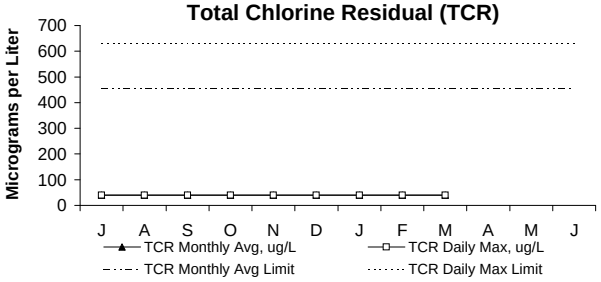
cBOD



In the 3rd Quarter of FY11, both the weekly and monthly concentrations of cBOD were well below permit limits.

cBOD, or Carbonaceous Biochemical Oxygen Demand, is a measure of the amount of dissolved oxygen required for the decomposition of organic materials in the environment.

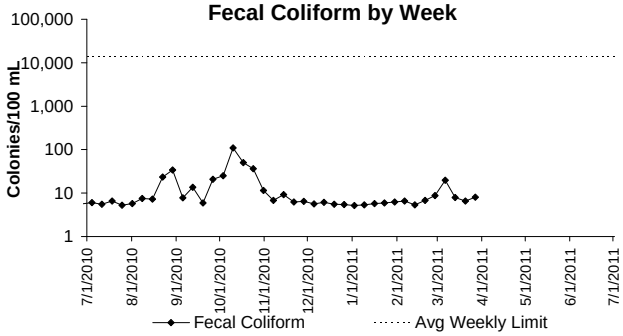
Total Chlorine Residual (TCR)



In the 3rd Quarter of FY11, both the maximum daily and monthly concentrations of TCR were below permit limits.

TCR, or Total Chlorine Residual in the effluent, is a measure of the amount of chlorine that remains after the disinfection/dechlorination process. If the chlorine residual in the effluent is too high, it may threaten marine organisms.

Fecal Coliform by Week



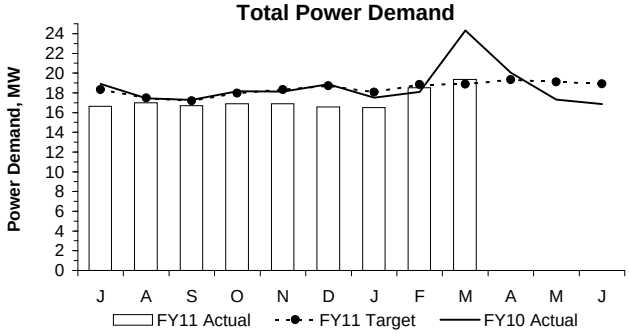
In the 3rd Quarter of FY11, all permit conditions for Fecal Coliform were met. There was a slight increase in Fecal Coliform during the second week in March due to high flows associated with heavy rain combined with significant snowmelt. Fecal Coliform is an indicator of the presence of pathogens. The levels of these bacteria after disinfection show how effectively the plant is inactivating many forms of disease-causing microorganisms.

There are four conditions in the permit that must be met: daily geomean; weekly geomean; 10% of all samples; and greater than three consecutive samples not to exceed 14,000 col/100mL.

Massachusetts Water Resources Authority

Deer Island Treatment Plant Performance

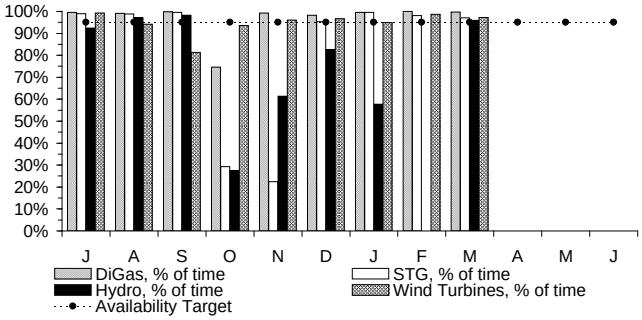
Total Power Demand



Total Power Demand in the 3rd Quarter of FY11 was within 2% of the target for the quarter as Total Plant Flow was within 2% of the target. During the 3rd Quarter, power demand for pumping alone was 4.4% higher than expected, mostly due to higher than expected demand for pumping in the south system. Power demand for all of the other treatment processes were also similar to or lower than the expected for the quarter. Total Power Demand in the 3rd Quarter of FY11 is 9% lower than the demand during the same period in FY10 due to record setting high plant flows in March 2010 caused by a number of historic storm events.

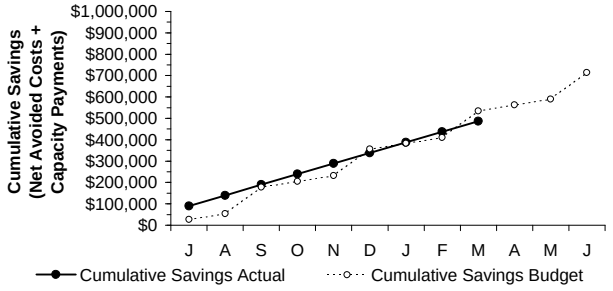
Self-Generation Equipment On-Line

(% of Time in Operation)



The DiGas, STG, and Wind Turbines all met their 95% Availability Target for the 3rd Quarter of FY11 , while the Hydro Turbines system was 51.2% below target. The Hydro Turbines were offline for a significant portion of the quarter due to a broken cable on the intake gate (Hydro #1) and to a failed shaft seal (Hydro #2). Both Hydro Turbines were back in service in March. Please note the 95% Availability Target for the Wind Turbines is an overall annual availabililty target as specified in the turbine vendor contract (and not a monthly target).

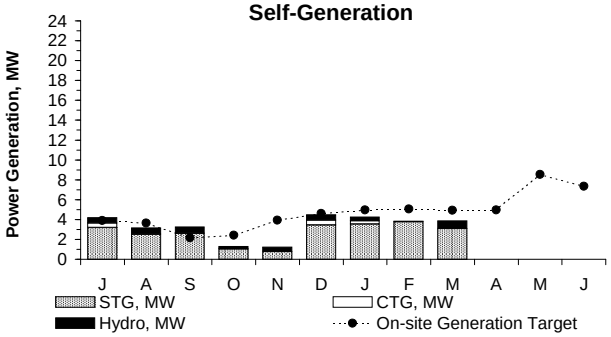
Load Response Program



DI did not participate in any demand response events during the 3rd Quarter of FY11 as none were called.

Deer Island participates in the ISO-New England Load Response Programs. By agreeing to have its Combustion Turbine Generators available to run and thus relieve the New England energy grid of Deer Island's load during times of high energy demand or high pricing, MWRA receives monthly Capacity Payments from ISO-NE. When it runs the CTGs at ISO-NE's request, Deer Island receives energy payments from ISO-NE and also avoids NSTAR transmission and distribution charges. "Net Avoided Cost" is the avoided NSTAR payments offset by the cost of running the CTGs, and the energy payments from ISO-NE. Cumulative savings are the sum of Net Avoided Costs and montly Capacity Payments - totaling $487,231 through the 3rd Quarter FY11 compared to the budgeted savings of $535,050.

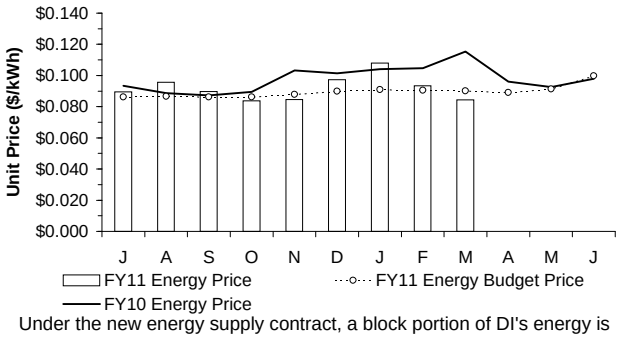
Self-Generation



Power generated on-site was 13% lower than target for the 3rd Quarter of FY11. The STG, Hydro Turbines, and Solar Panels all fell below their generation target for the quarter by 7%, 50%, and 79%, respectively, while generation by the CTGs and Wind Turbines exceeded their target by 20% and 22% respectively. Solar Power generation was 0.45% and Wind Turbine generation was 7.5% of the total power generated on-site for the 3rd Quarter. The CTGs were operated for a total of 21.1 hours in the quarter, of which 14.27 hours on January 12 was during blizzard conditions in parallel with NSTAR power to maintain plant operation during an extreme weather event, 2.48 hours for compliance opacity testing, and 4.4 hours for routine maintenance and other miscellaneous events/testing. DI did not participate in any demand response events during the 3rd Quarter as anticipated in the budget as none were called.

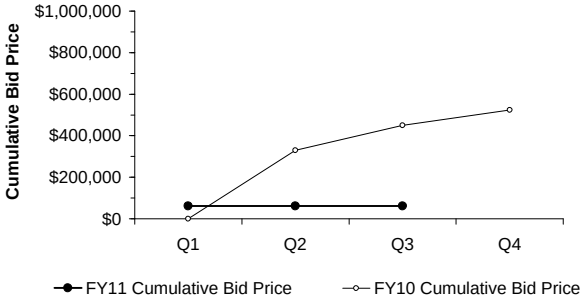
Total Energy Pricing

(includes spot energy price, ancillary costs, and NSTAR's transmission & distribution costs)



Under the new energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. Overall, the total energy price in the 3rd Quarter of FY11 was 5% higher than the budgeted spot energy price due to 19% higher than expected prices in January. The total energy price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges. Please note the February and March total energy prices are an estimate as the invoices has not been received. Year-to-date costs are estimated at approximately $266,426 more than budgeted through the 3rd Quarter of FY11.

MA Renewable Portfolio Standard



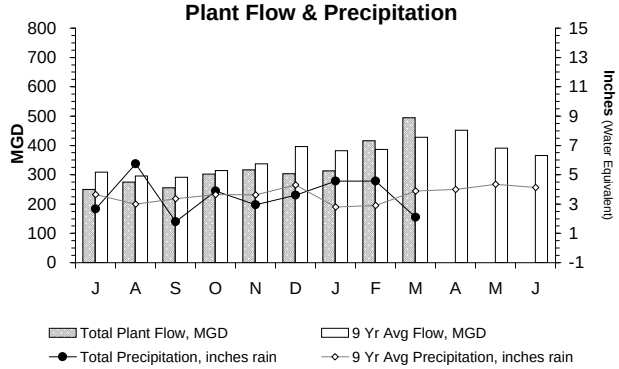
There were no Renewable Energy Certificate (REC) bids during the 3rd Quarter of FY11. RPS credits have been temporarily banked (not provided for bidding) until the market improves. The hope is to be on target by the end of FY11.

REC prices reflect the bid prices on the date that bids are accepted. Cumulative bid price reflects the total value of bids received to date. The FY11 budgeted cumulative bid estimate through March is $464,598 while the actual bid total is $61,288.

Massachusetts Water Resources Authority

Deer Island Treatment Plant Performance

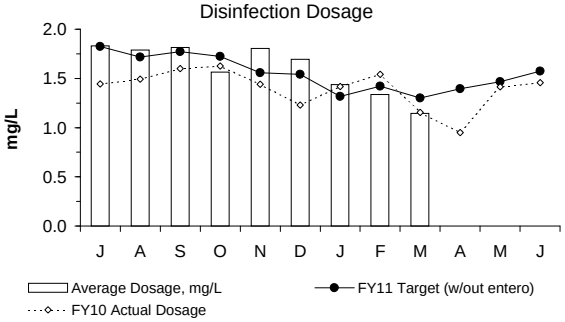
Plant Flow & Precipitation



The Total Plant Flow for the 3rd Quarter of FY11 was within 2% of the 9-year average flow estimate (407.8 MGD actual vs. 398.8 MGD expected) even though precipitation was 17% higher than expected for the quarter (11.24 inches actual vs. 9.60 inches expected). A significant portion of this quarter's precipitation, especially in January and February, fell in the form of snow which did not directly impact plant flow until March, at which time higher than normal daytime temperatures, in combination with several sizeable rain events, resulted in elevated plant flows largely impacted by significant snowmelt.

Deer Island Sodium Hypochlorite Use

Disinfection Dosage



The disinfection dosing rate was slightly below target for the 3rd Quarter of FY11. The average dosing rate for the quarter of 1.31 mg/L was only 3% lower than the 1.35 mg/L expected.

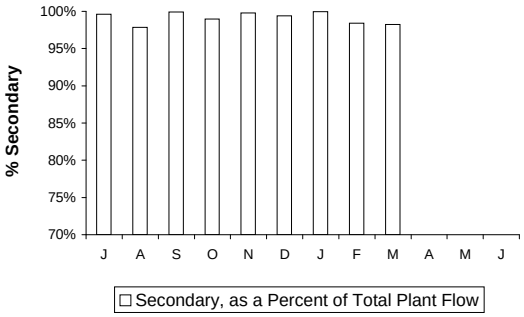
The overall disinfection dosing rate (target and actual) is dependent on plant flow, target effluent total chlorine residual levels, effluent quality and NPDES permit levels for fecal coliform.

Secondary Blending Events

Month	Count of Blending Events	Count of Blending Events Due to Rain	Count of Blending Events Due to Non-Rain-Related Events	Secondary, as a Percent of Total Plant Flow	Total Hours Blended During Month
J	1	1	0	99.6%	4.5
A	3	3	0	97.9%	19.51
S	1	1	0	99.9%	2.24
O	2	2	0	99.0%	12.81
N	2	2	0	99.8%	5.62
D	1	1	0	99.4%	7.62
J	1	1	0	99.9%	3.28
F	2	2	0	98.4%	21.30
M	7	6	1	98.3%	48.71
A					
M					
J					
Total	20	19	1	99.1%	125.6

There were ten (10) separate blending events during the 3rnd Quarter of FY11. There was one (1) blending event in January, two (2) events in February, and seven (7) events in March resulting in a total of 78.1 hours of blending and 461.1 Mgal of primary-only treated flow blended with secondary effluent during the 3rd Quarter of FY11. All but one (1) of the secondary blending events that occurred during the quarter were due to high plant flows resulting from rain combined with snowmelt. A brief 12 minute blending event on March 30 resulted from essential maintenance activities on the bypass gate. 1.71 Mgal of flow blended with secondary effluent during this brief event. **Secondary permit limits were met at all times.**

Deer Island Secondary Treatment as a Percent of Total Plant Flow



Overall, 98.7% of the total plant flow to DITP was treated through secondary treatment during the 3rd Quarter of FY11. The Maximum Secondary Capacity for the entire quarter was 700 MGD.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

Precipitation for the 3rd Quarter of FY11 was above target with the 9-year historical average for the quarter with a total of 11.24 inches of precipitation falling on 30 out of 90 days. A total of 58.1 inches of snow fell during the 3rd Quarter with 38.3 inches of snow in January, 18.5 inches in February, and only 1.3 inches in March. Total precipitation for the 3rd Quarter of FY11 was 17% higher than the 9-year average precipitation for the quarter of 9.60 inches of water equivalent precipitation, but was 47% lower than the FY10 precipitation of 21.12 inches for the same period as precipitation during the 3rd Quarter of FY10 was much higher than expected due to a number of heavy and record setting storms in late February and March 2010.

The Total Plant Flow for the 3rd Quarter was 2% higher than the 9-year average target (407.8 MGD actual vs. 398.8 MGD target) but 18% lower than the FY10 Total Plant Flow of 496.4 MGD for the same period. The plant achieved a maximum average hourly flow rate of 1,159 MGD on February 25 as a result of a rainstorm that began overnight and intensified over the course of the morning and early afternoon. Moderate rainfall continued throughout the rest of the day and changed over to snow in the evening. A total of 1.63 inches of water equivalent precipitation fell on this this day. Pumping and treatment operations continued without incident through this storm event, as well as, throughout the entire month.

Massachusetts Water Resources Authority

Deer Island Treatment Plant Performance

Deer Island Operations & Maintenance Report (continued)

Primary and Secondary Treatment (continued):

Progress on the major Primary and Secondary Clarifier Rehabilitation Project, MWRA contract #6899, continued through the 3rd Quarter. The primary scope of this contract project is to replace all the chains and sprockets in the primary and secondary clarifiers along with some other limited repairs. Because of significant rain events and high plant flows in February and March, the contractor was not able to proceed with the rehabilitation work as anticipated for periods of time as a minimum number of clarifiers were needed to be available for operation during times of high flows. Rehabilitation work on a total of four (4) primary clarifiers and four (4) secondary clarifiers were completed during this quarter. Four (4) primary clarifiers and three (3) secondary clarifiers were in the process of being rehabilitated at the end of the 3rd Quarter. The rehabilitation work for 79% of all of the clarifiers have been completed as of the end of the quarter.

Secondary Treatment:

98.7% of all flows were treated at full secondary for the 3rd Quarter of FY11. There was one (1) secondary blending event in January, two (2) in February, and seven (7) in March, for a total of 10 blending events during the 3rd Quarter of FY11. All but one of these secondary blending events were a result of high plant flows caused by rain combined with snowmelt. A brief 12 minute blending event on March 30 resulted from essential maintenance activities on the bypass gate. 1.71 Mgal of flow blended with secondary effluent during this brief event. The 10 blending events resulted in a total of 78.1 hours of blending and 461.1 Mgal of primary-only treated flow blended with secondary effluent. The secondary process maximum limit for the entire quarter was 700 MGD. No permit exceedences occurred as a result of any of the secondary blending events during the 3rd Quarter of FY11.

Residuals Treatment:

Module #3 Digester #3 was taken offline temporarily on March 14 to replace a broken mixer and several pressure reducing valves. The digester was placed back into operation on April 1. Six (6) active digesters remained in operation during this period.

Odor Control:

Carbon media changeout was performed on carbon adsorber (CAD) units #1 and #2 in the East Odor Control (EOC) Facility in the 3rd Quarter. Additionally, the internal surface of CAD units #8 in the West Odor Control (WOC), #3 in the North Pumping Odor Control (NPOC), and #4 in the Residuals Odor Control (ROC) Facilities were recoated this quarter and carbon media was added to the units. These adsorbers were recoated as a preventative maintenance measure to ensure the integrity of the underlying internal structure of the adsorber by preventing corrosion and wear as the existing coating has aged over time.

Energy:

Deer Island is currently enrolled in the Demand Response Program. The Demand Response Program (administered by the not-for-profit Independent System Operators of New England or ISO-NE) compensates energy users for reducing their electrical consumption during a called event to help alleviate fuel supply contraints and elevated pricing in the region. DI did not participate in any demand response events in the 3rd Quarter as none were called.

"Renewable Energy Certificate (REC)" - There were no Renewable Energy Certificate (REC) bids in the 3rd Quarter of FY11. RPS credits have been temporarily banked (not provided for bidding) until the market improves. The hope is to be on target by the end of FY11.

Under the new energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The overall total energy price in the 3rd Quarter was 5% higher than the FY11 budget estimate for the quarter due to 19% higher than expected prices in January. However, the 3rd Quarter total energy price was 12% lower than the total energy price for the 3rd Quarter of FY10. The total energy price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges. Please note the February and March total energy prices are estimates as the invoices have not been received.

Opacity Testing was performed and completed successfully on January 28 as part of the annual requirements for emissions reporting on the CTGs. The test requires each CTG to be operated (one at a time) at full load for one hour. During this time a certified “smoke reader” observes the condition of the stack exhaust and records the results.

Solar Power generation was 0.45% and Wind Turbine generation was 7.5% of the total power generated on-site for the 3rd Quarter. Please note, due to the absence of actual historical monthly data, the target generation for the Wind Turbines and for the solar panels on top of the Maintenance/Warehouse building are based on annual estimates that are evenly spread over the course of the year. Therefore, monthly variances from target generation are to be expected for these units for the time being. The Wind Turbines on DI have been in operation for slightly less than one-and-a-half years and the Maintenance/Warehouse building solar panels have been in operation for one (1) year as of March 26.

Lumus Contruction proceeded with significant progress on the installation of the new FloDesign wind turbine being installed on the northern side of Deer Island in an area near the Hydro Power Plant. Construction completion is estimated for April 20.

Installation of two solar photovoltaic (PV) systems by Broadway Electric, one on the rooftop of the Grit Facility and another on the ground of the South Parking Lot (under the existing Wind Turbines), are nearing completion. Both systems are scheduled to be activated next month in April. These two solar panel systems are procured through a Solar Power Purchase Agreement, a financial arrangement in which a third-party developer designs, procures, installs, owns, operates and maintains the system and the host customer provides the site and purchases the electricity. The installation cost is funded through the American Recovery and Reinvestment Act.

The installation of a new Back Pressure Steam Turbine Generator (BP STG) in the Thermal Power Plant was near completion by the end of March. The new BP STG will improve the utilization of the heat generated from the boilers during the summer period by reducing the amount of excess (waste) thermal energy produced by the boilers but not utilized by the current STG when there is a lower heating demand on DITP. The BP STG utilizes a more efficient energy conversion mechanism than the current STG. Therefore, during the summer when the plant heating demand is low, more of the high pressure-high temperature steam will be directed to the new BP STG, rather than to the current STG, to generate more electricity. The commissioning of the BP STG started on March 14 and the Performance Test is scheduled for mid-April.