

University of Toronto – 2018-19 Incremental Projects Grant – Institutional Performance Objectives

Project	Priority Area	Investment of IPG Funds	Institutional Performance Objective	Performance Indicators	Reported Outcomes
Medical Sciences Building Chiller Plant Optimization	Facilities renewal, including deferred maintenance (Research Facilities)	Percentage of IPG grant invested in supporting this project: 69%	Replacement of past life cycle chillers, optimization chilled water distribution	<ol style="list-style-type: none"> 1. Installation of Direct Digital Control (DDC) automation systems in plant and distribution system 2. Replacement of absorption chillers with higher efficient steam turbine driven chiller 3. Replacement of electric chiller at end of life cycle with higher efficient equipment 4. Installation of pressure reduction valves (PRV) by-pass turbines to capture electrical energy 	<p>Indicator 1: The installation of DDC automation systems minimized the operating requirement through load demand reduction using an optimization model</p> <p>Indicator 2: The replacement of the absorption chillers with the steam turbine driven chillers reduced the steam usage directly effecting a natural gas reduction of 2,035,494 m3.</p> <p>Indicator 3: The replacement of the aged electric chiller with the higher efficient model created efficiencies of 0.27 – 0.35 kW / ton substantially reducing electricity consumption.</p> <p>Indicator 4: Due to technological issue with equipment this project was not realized</p>

University of Toronto – 2018-19 Incremental Projects Grant – Institutional Performance Objectives

<p>Central Steam Plant (CSP)</p>	<p>Facilities renewal, including deferred maintenance (Research Facilities)</p>	<p>Percentage of IPG grant invested in supporting this project: 31%</p>	<p>Optimization Using Heat Recovery and Increased Heat Exchanger Efficiency</p>	<ol style="list-style-type: none"> 1. Expansion of the flue heat recovery system extracting more energy reducing the required combustion of natural gas 2. Replacement of the steam to high temperature hot water heat exchangers to more efficient technology reducing the energy efficiency, reducing combustion of natural gas. 3. Installation of pressure reduction valves (PRV) by-pass turbines to capture electrical energy 	<p>Indicator 1: The installation of heat exchangers, controls including automation and subsequent flue gas damper in stack, and installation of stainless steel flue gas stack. These changes effected the ability to provide approximately three times the energy from the energy recovery system compared to previous. The buildings in receipt of this energy are currently being retrofitted to receive the newly available energy.</p> <p>Indicator 2: The installation of one high efficiency plate and frame heat exchanger replace three original tube in shell heat exchangers has increased the performance lowering the thermal energy usage 1,643mmBTU.</p> <p>Indicator 3: Due to technological issue with equipment this project was not realized</p>
----------------------------------	---	---	---	--	---