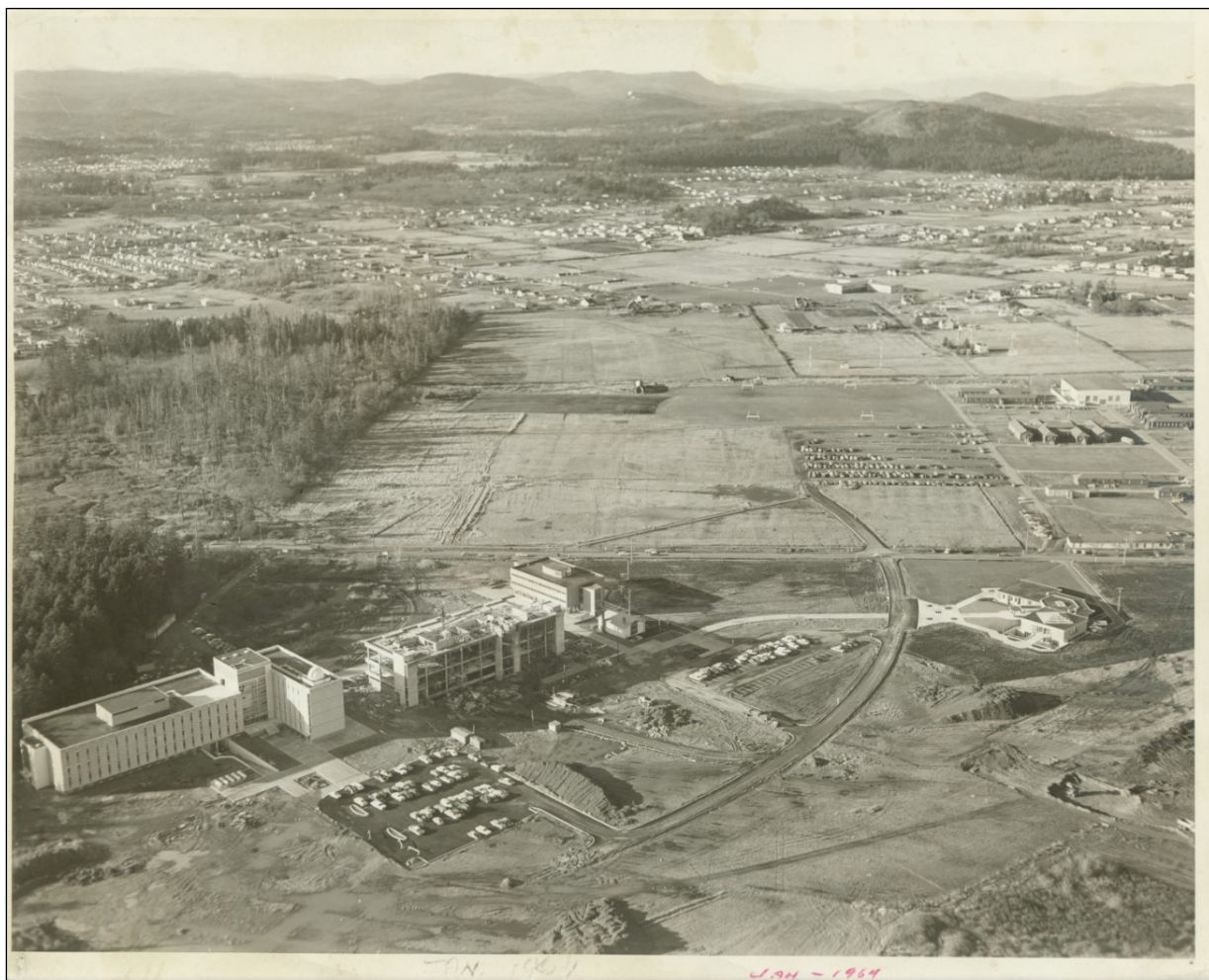
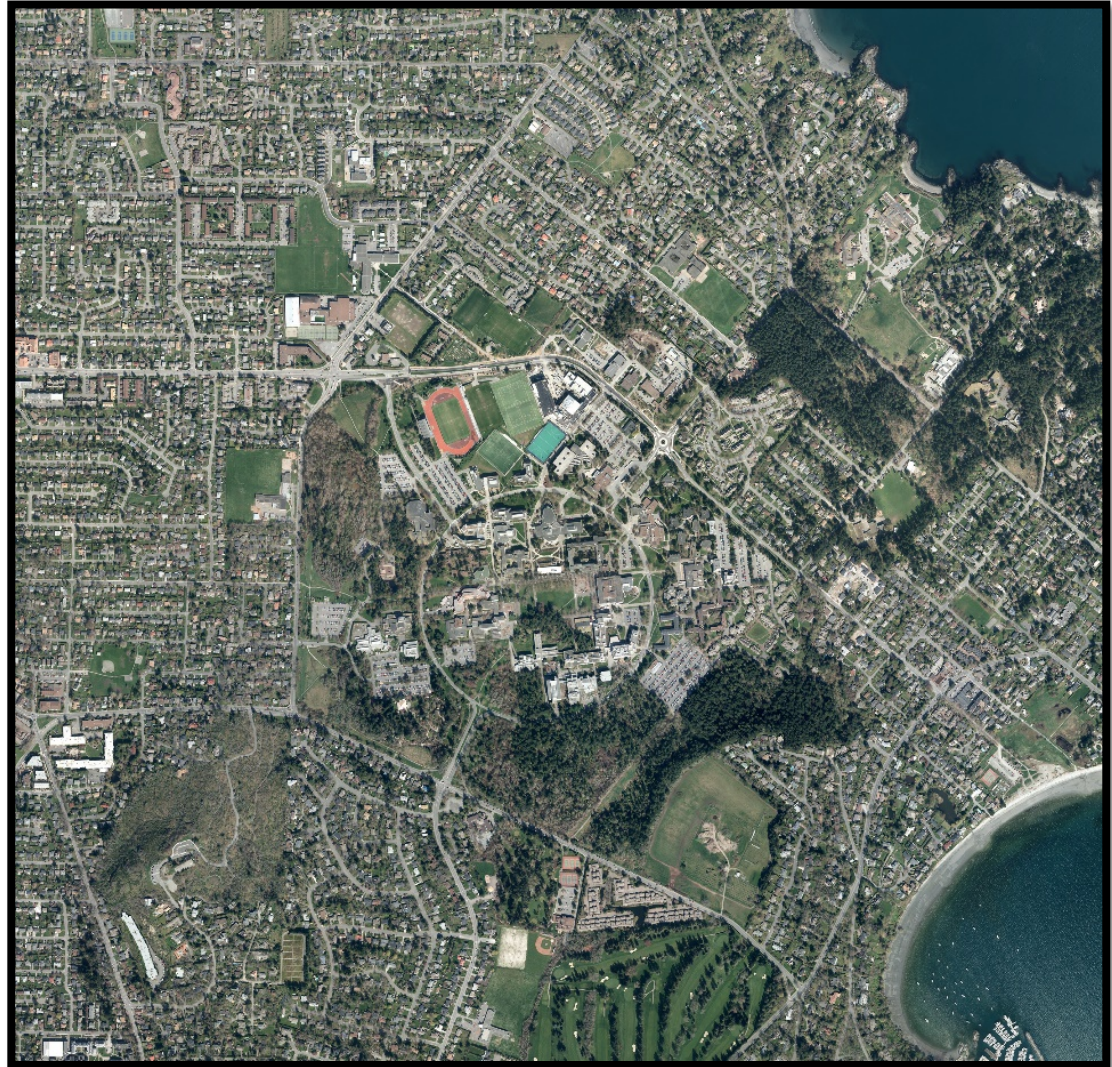


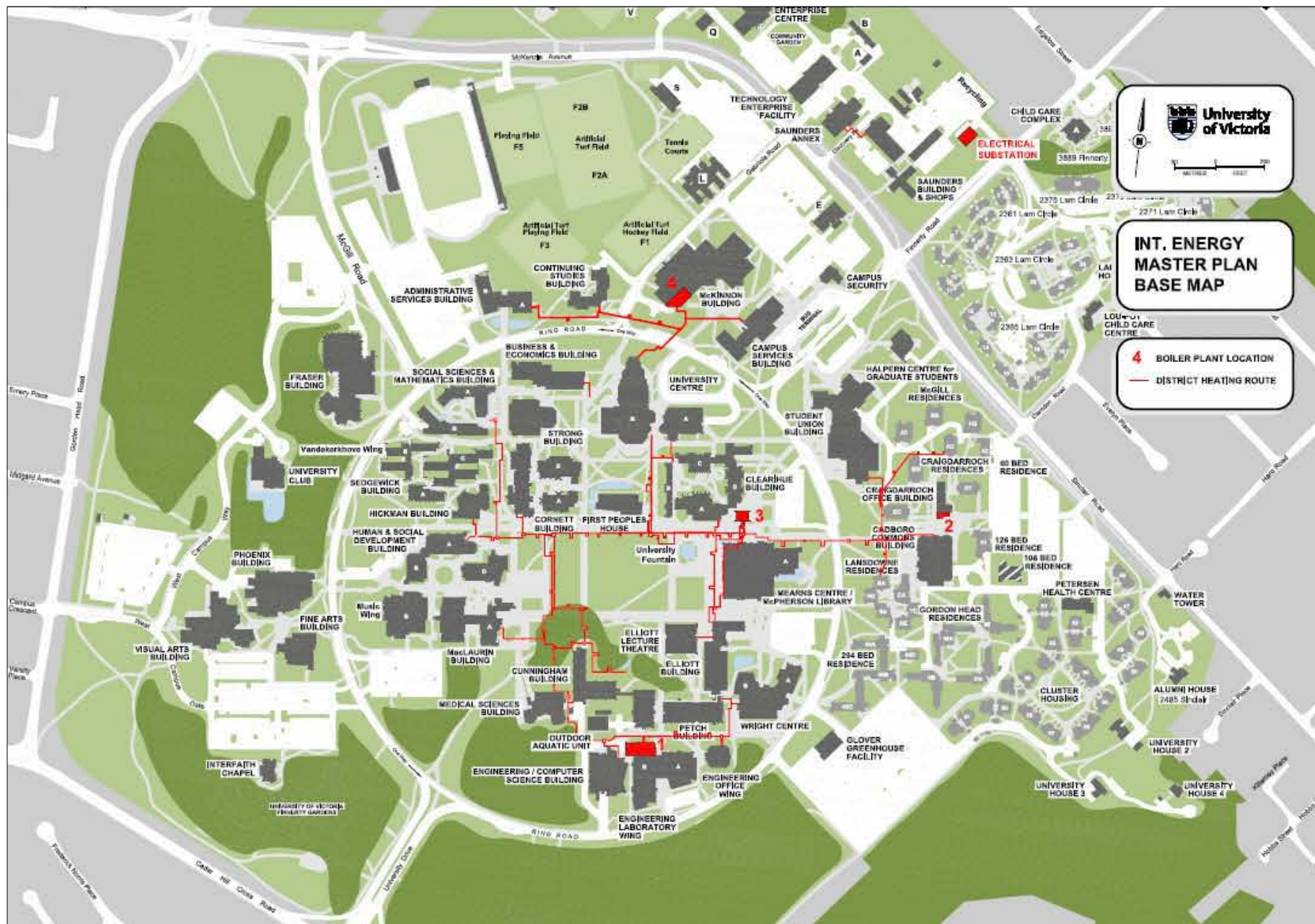


About UVic

- Founded: 1963
- Full Time Equivalent Students: 18,500
- Number of Buildings: 135
- Gross Building Floor Area: 400,000 m²
- Students in Residence: 2,300
- BC Public Sector Greenhouse Gas Emissions in 2014: 2.1%



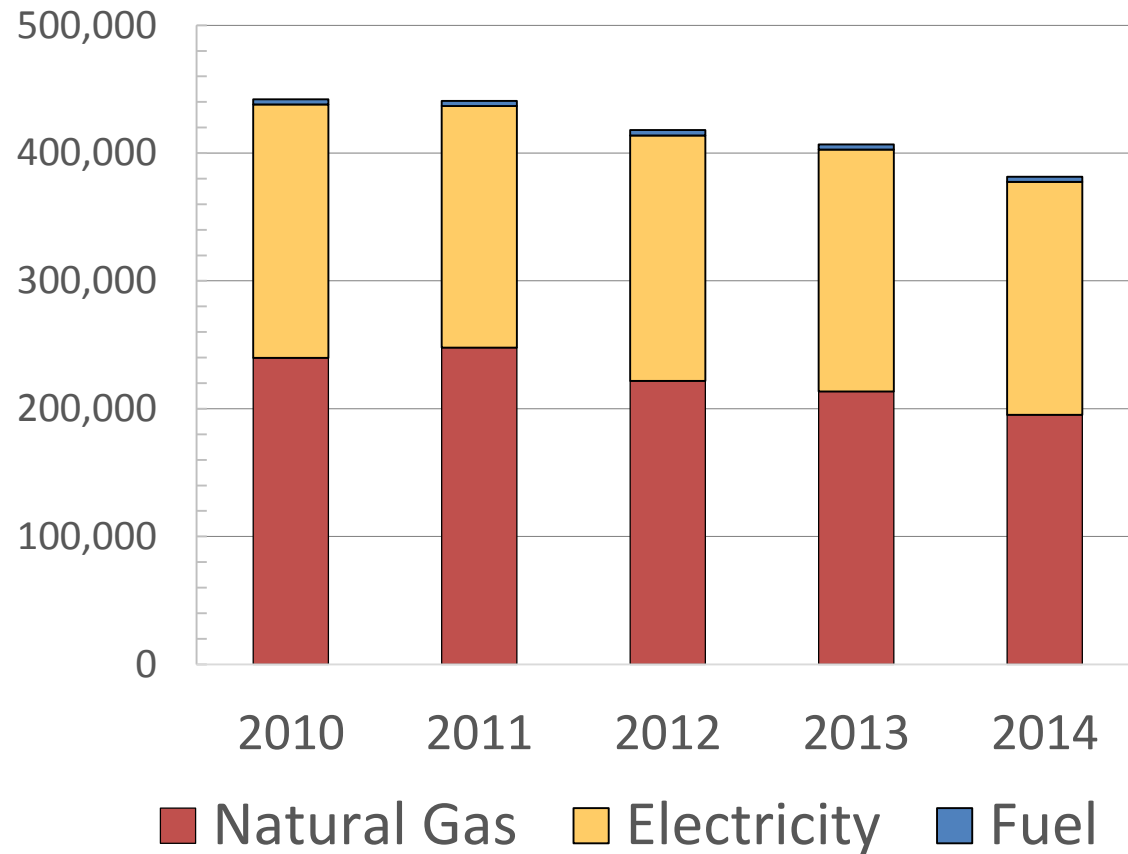
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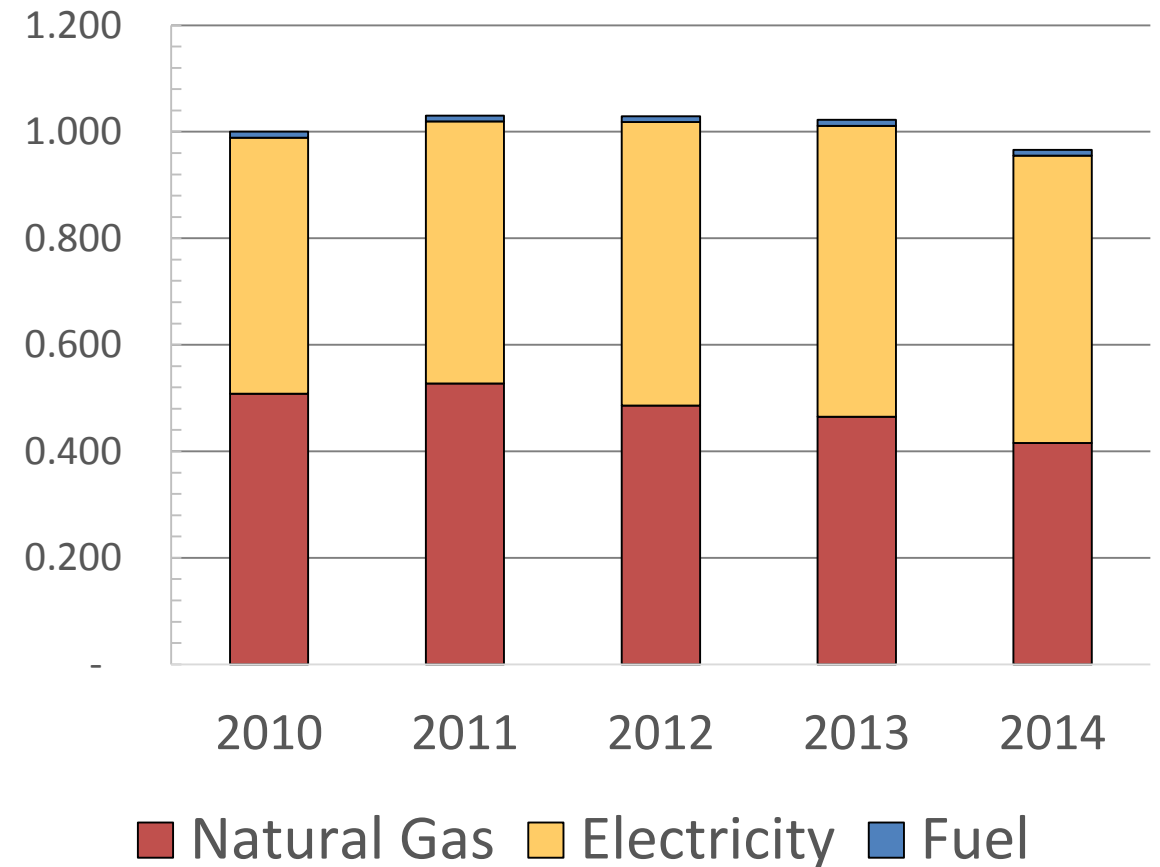
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Campus Energy: 2010 - 2014

Energy Consumption [GJ]

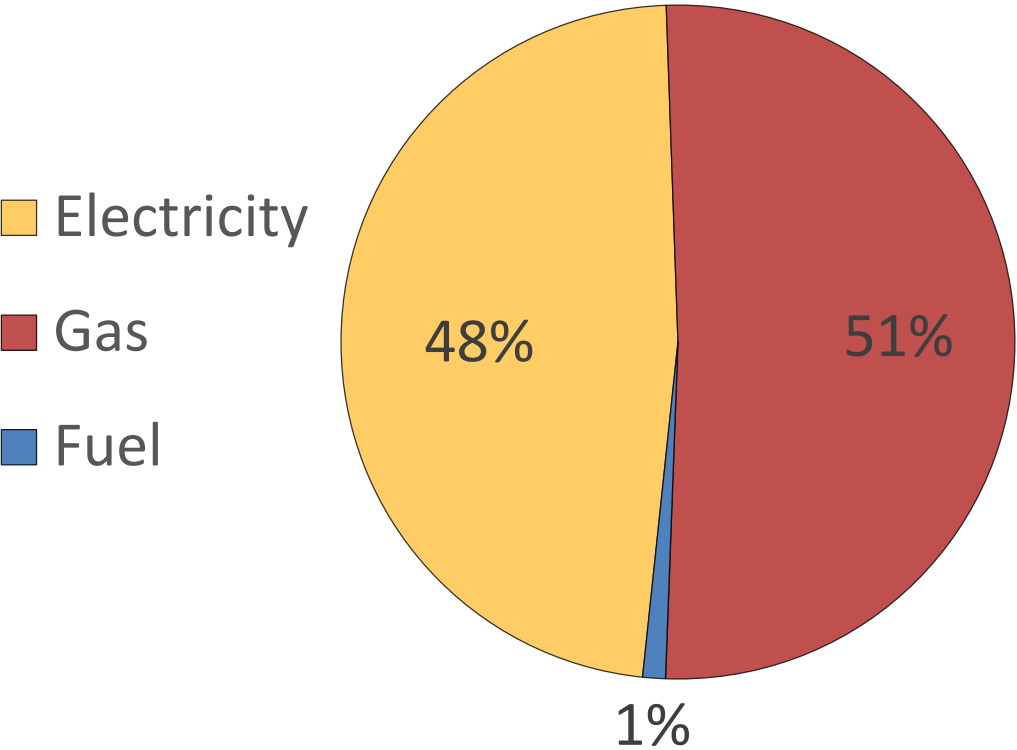


Energy Cost

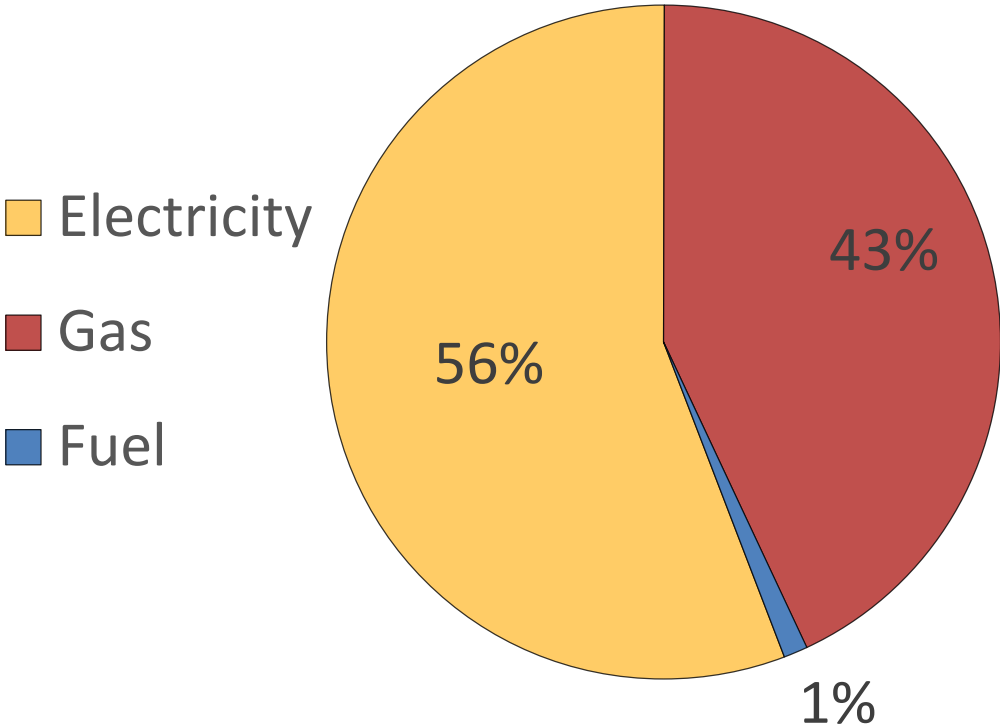


Energy Use By Source: 2014

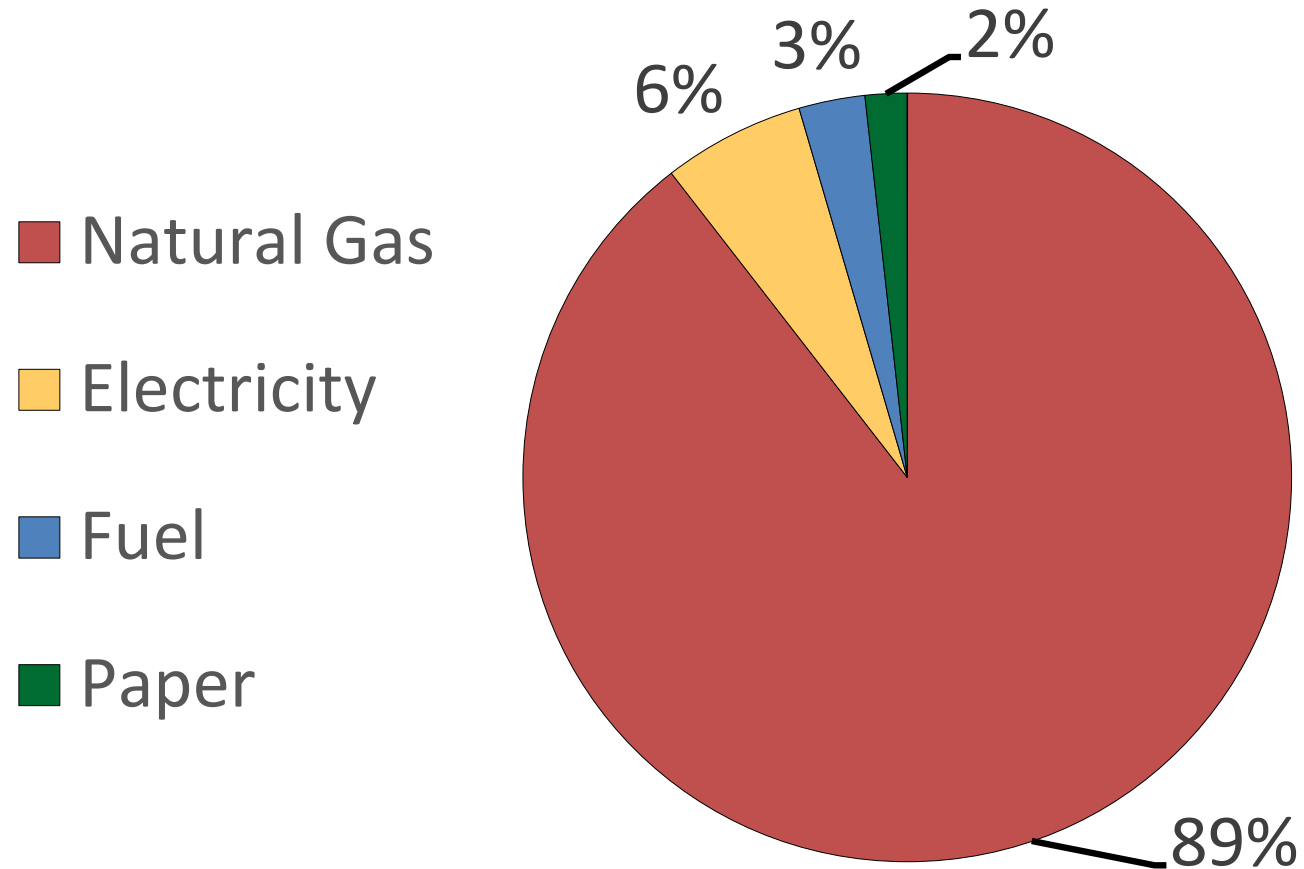
Energy Breakdown



Cost Breakdown



Greenhouse Gas Emissions by Source: 2014



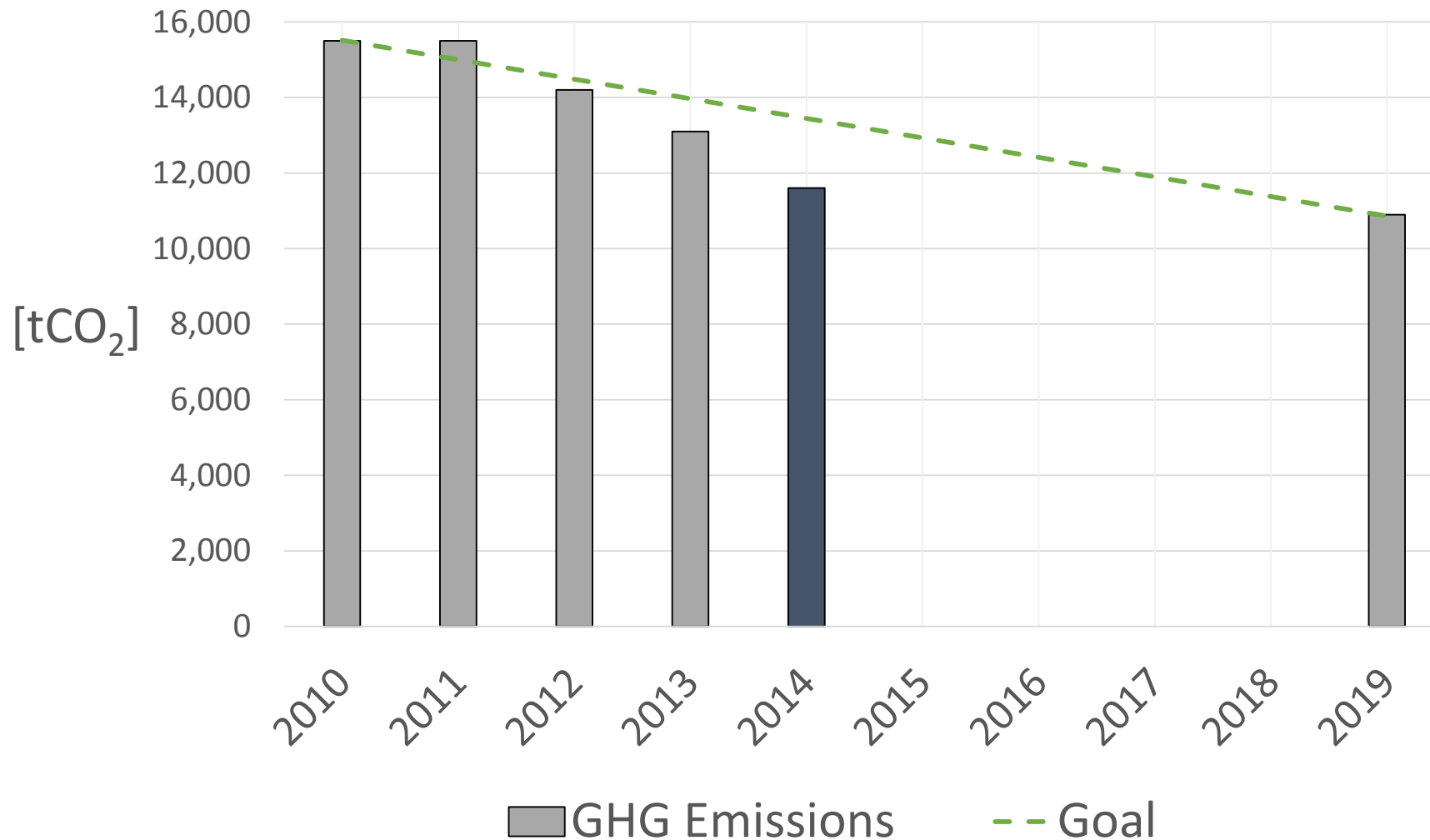
Source	Emissions [tCO ₂]
Natural Gas	10400
Electricity	700
Fuel	300
Paper	200
Total	11600



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Source: Carbon Neutral Report 2014

Greenhouse Gas Emissions: 2010 - 2019

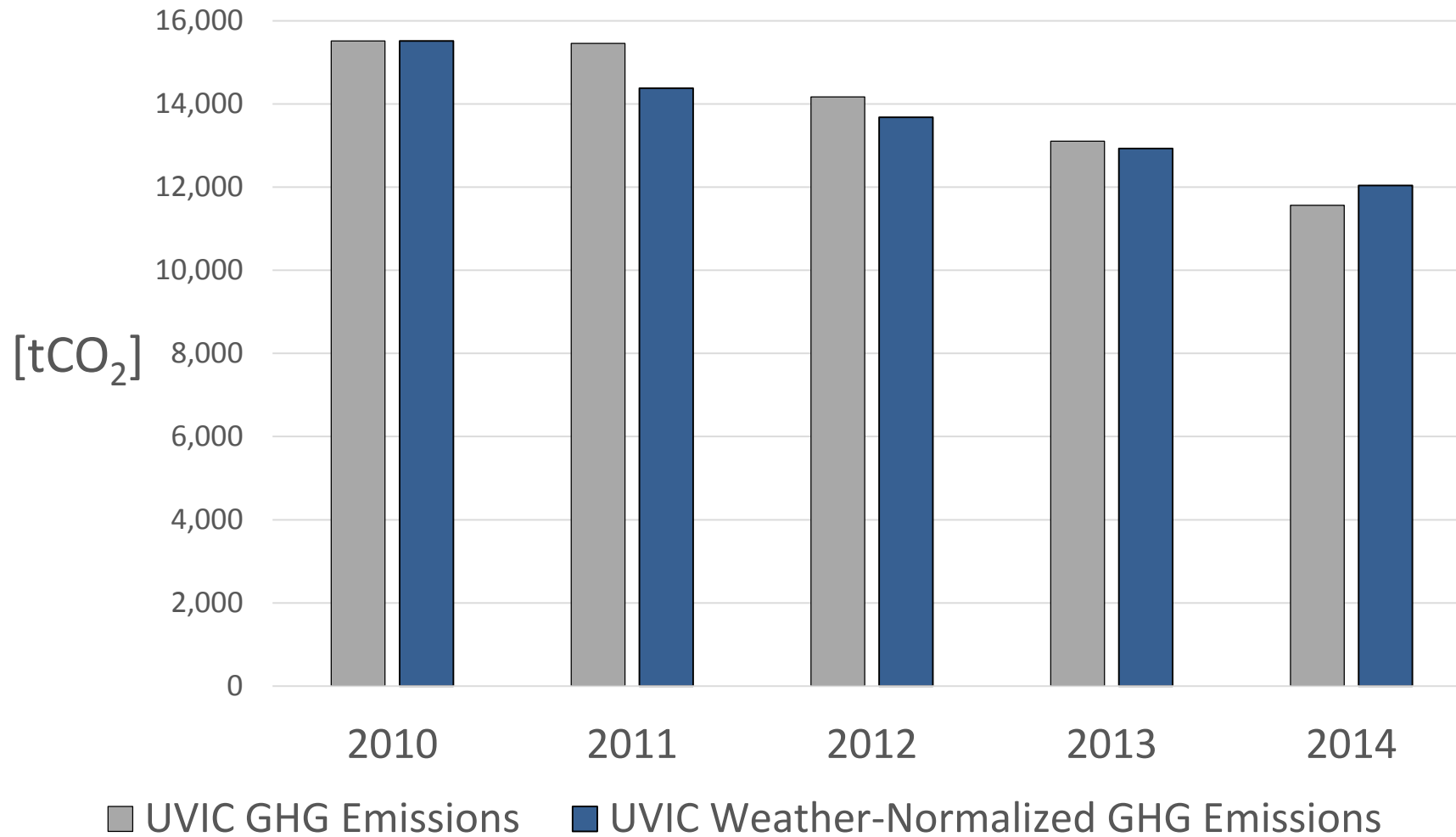


Year	% Reduction from 2010
2010	0.0%
2011	0.4%
2012	8.7%
2013	15.5%
2014	25.5%
2019 Goal	30%



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Greenhouse Gas Emissions Weather Normalized



Heating Degree Days	
Year	HDD/Year
2010	2850
2011	3130
2012	2990
2013	2910
2014	2690



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Key Success Factors

- Strong Support from Executive Group
 - o Facilities Management and Office of Campus Planning & Sustainability report directly to VPFO
 - o Sustainability Policy established 2009
- Sustainability Positions Established
 - o Sustainability Coordinator – 2001
 - o Energy Manager – 2010
- Early Accountability
 - o First Greenhouse Gas Emissions Report – 2007
 - o First Carbon Neutral Action Report – 2008
 - o UVic Sustainability Project Climate Leadership Report - 2007



Role of Leadership, Culture, and Champions

- Leadership

- o Executive Group sees the value of a project beyond the bottom line
- o Facilities Management ensures resources allocated to energy reduction projects
- o Campus Planning and Sustainability provides vision and connects departments across campus
- o Student Sustainability Organizations encourage student involvement

- Culture

- o Students drive institutional interests
- o Sustainability Projects have easier buy-in because of a strong culture



Lessons Learned

- Large Opportunity for Optimization in Existing Buildings
 - Building Automation and Retro-commissioning
 - Occupant Behavioural Change
- Renewable Energy Projects less effective than Building Optimization
 - Market is less mature
 - Higher capital cost
 - Weaker payback periods
- Have GHG Reduction Projects ready
- Energy considerations included early in project planning



Funding & Incentives

- BC Hydro Energy Manager Program
- BC Hydro Energy Conservation Incentives
- Fortis BC Incentives
- AVED Carbon Neutral Capital Program
- Knowledge Infrastructure Program 2010/2011
- UVic Revolving Sustainability Loan Fund Since 2011
- UVic Utility Budget – Savings help fund future projects
- CAS Support: Reporting tools (SmartTool)



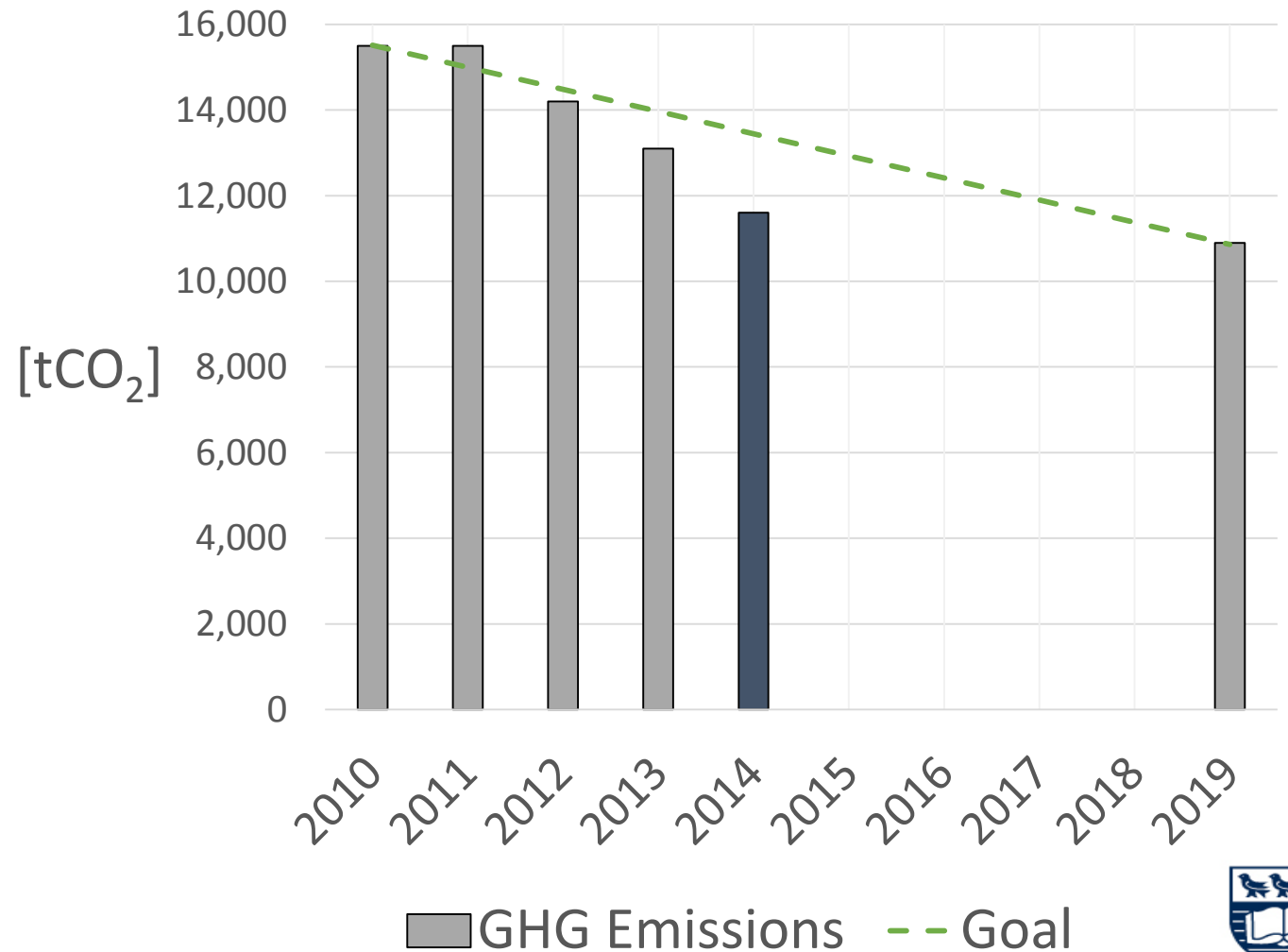
Hurdles and Obstacles

- GHG reduction will become increasingly expensive (poor payback for new projects)
 - o Geothermal systems are expensive
 - o Continuous Optimization Program for all major buildings is complete
- Inexpensive Natural Gas (33% drop in rates over 5 years)
 - o Business case for fuel switching to electricity is more difficult
- Pilot Advanced Technology
 - o Fault Detection algorithms and software to provide automation support for preventative maintenance



Path to 2020

- District Energy System Upgrade: est. 900 tCO₂ saved
- Residence Building Automation
- Data Center Heat Recovery
- Increased Preventative Maintenance
- Increased use of Champions to Identify Opportunities
- Continued Reporting on Sustainability Action Plan Goals



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