SWATeam Recommendation Water002

Name of SWATeam: Water and Stormwater

SWATeam Chair: Art Schmidt Date Submitted to iSEE: 12/6/16

Specific Actions/Policy Recommended (a few sentences):
We recommend that a small tonnage (< 700 tons cooling capacity) stand-alone cooling tower on campus operating at a water concentration cycle of less than 2.5 be operated using softened water under high pH/high silica conditions to demonstrate near zero blowdown operation.

Rationale for Recommendation (a few sentences):

Evaporative cooling towers dissipate excess heat through evaporation of water. They perform an essential function in building cooling during summer months. However, they can also be a source of excessive water use. Stand-alone cooling towers on campus were found to be particularly wasteful in a study conducted in 2011 on behalf of the Student Sustainability Committee. Studies in 2015/2016 carried out by the Illinois State Water Survey/Illinois Sustainable Technology Center have successfully demonstrated that use of softened water in conjunction with high pH/high silica can be successful in operating a cooling tower on campus situated at the Regional Office Building, S. First St., Champaign, IL under zero blowdown conditions. This resulted in a water savings of about 500,000 gallons in 2016. This building is owned by the State and is not a UIUC building. It is proposed that a similar demonstration be carried out on a UIUC owned cooling tower.

Connection to iCAP Goals (a few sentences):

iCAP goal is, 'to improve chiller plant cooling towers water efficiency by limiting the amounts discharged to sewer to less than 20% of water intake by FY17 and to less than 33% of water intake in stand-alone building cooling towers by FY 20.' This recommendation provides a pilot project to demonstrate and evaluate the feasibility of attaining this iCAP goal.

Perceived Challenges (a few sentences):
Funding would be required to purchase and install high efficiency softeners and to procure the services of the vendor supplying this technology (WCTI and representative in IL, Michael Dwyer/Ecochem).

Other challenges: Payback can vary depending on how inefficient current cooling tower operations are; skepticism to unfamiliar approaches/vendor relationships; fears about unintended consequences such as corrosion (all of the above can be mitigated by supervised trials – suggest that Illinois State Water survey Industrial Water treatment Program be retained for analytical support)

Suggested unit/department to address implementation:
Facilities and Services or Housing

Anticipated level of budget and/or policy impact (low, medium, high): estd. $10 -15,000

Individual comments are required from each SWATeam member (can be brief, if member fully agrees):

Team Member Name	Team Member's Comments
Keith Erickson	Good project. I concur.
John Berens	Great opportunity to reduce water usage on campus
N Rajagopalan	Cooling towers represent a rich, soft target for water savings - does not involve change in behavior — limited prior experience on campus positive – this project provides an opportunity to add experience – familiarize campus groups to technology

Rabin Bhattarai	I also agree with the recommendation as it relates to one of the iCAP goals.
Art Schmidt	I fully concur with this recommendation. This provides an immediate opportunity to directly address one of the iCAP goals.

Comments from Consultation Group (if any; these can be anonymous):

Explanation and Background (can be supplied in an attachment):