

MINUTES
UNIVERSITY ADVISORY COUNCIL ON
STRATEGIC BUDGETING AND PLANNING
November 16, 2017

PRESENT: Maria Balota (via WebEx), Michele Borgarelli, Tim Hodge, Cayce Myers, Andi Ogier, Robert Sebek, Dwight Shelton, Ken Smith, Michael Sorice, Rex Willis and Jack Washington (substitute for Jason Soileau).

ABSENT: Cyril Clarke, Henri de Hahn, Omchand Mahdu, Quinton Nottingham, Randy Penson, Hans Robinson, Benjamin Tracy, Linbing Wang, and Susan White.

1. CALL TO ORDER AND WELCOME NEW MEMBERS

Mr. Tim Hodge, Assistant-Vice President for Budget and Financial Planning, called the meeting to order. Mr. Hodge introduced himself then asked members to introduce themselves, as we had several members who were attending the council for the very first time.

2. APPROVAL OF THE SEPTEMBER 21, 2017 MINUTES

Mr. Hodge stated that the September 21, 2017 minutes have been approved and forwarded to the University Council for posting on the web.

3. UPDATE ON STATE BUDGET OUTLOOK

Mr. Hodge gave an update on the state budget outlook, which he shared the state's revenue growth of 4.9% is higher than projected at the end of October. He reminded the council that while the state's revenues are currently growing, the state has made commitments for that growth into K-12 education and Medicaid. Mr. Hodge also shared that the federal government had yet to continue to fund the CHIP program, which would take up additional resources at the state level if not reauthorized.

4. UNIVERSITY'S FIVE YEAR ENERGY ACTION PLAN

Dr. Ruban Avagyan, Campus Energy Manager, presented an overview of the University's Five Year Energy Action Plan to the council. Dr. Avagyan shared with the council that in 2014-15, the Facilities Department conducted a benchmarking analysis of all campus buildings, identifying 50 buildings on campus as energy intensive buildings ("energy hogs"). These 50 buildings represented only 35% of the university's facilities, but collectively accounted for approximately 70% of the utility costs. As a result, a Five Year Energy Action Plan was developed to address ten of the "energy hog" buildings each year.

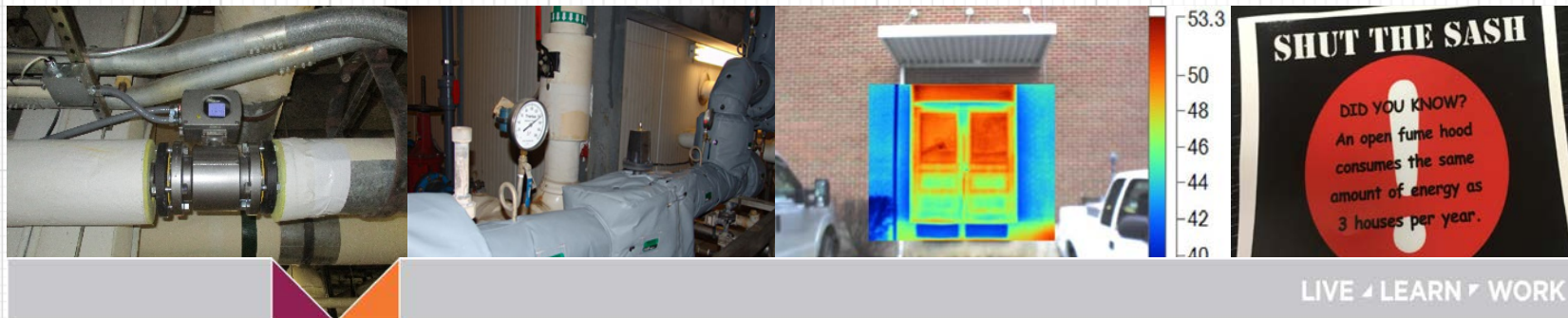
The main action items for each phase of the Energy Action Plan included:

- Conducting energy audits within the selected ten buildings;
- Implementing energy retrofit projects;
- Retro-commissioning;
- Installation of meters;
- Connecting to the Energy Management Platform.

Dr. Avagyan reviewed the first three phases of the Energy Action Plan with the Council, including a list of the buildings selected for each phase, what action items were completed and the resulting annual energy costs savings to the university. Dr. Avagyan added that they were in the process of adding a full time Energy Engineer and Energy Auditor, which will allow Facilities to complete energy audits in house. Dr. Avagyan concluded that with the implementation of the Five Year Energy Action Plan, aside from the energy savings, the university gained the added benefits of improved building performance, improved indoor air quality, better lighting, increased longevity of mechanical and lighting systems, and carbon footprint reduction. Additionally, Mr. Hodge explained how the energy savings helped fund the university budget. A PDF of the presentation is attached to these minutes.

5. No further business was discussed, and the meeting adjourned at 5:01 p.m.

VT 5-YR Energy Action Plan



▶ Presented by: Ruben Avagyan, Ph.D., PE, CEM

OFFICE OF ENERGY MANAGEMENT

- Monitor and analyze **energy consumption** on campus
- Establish energy-reduction **goals** and the **roadmap** to achieve them
- Coordinate implementation of energy **reduction** programs
- Oversee execution of energy **retrofit** projects
- Verify post-retrofit energy **savings**
- Report energy **statistics** to various stakeholders

5-YR ENERGY ACTION PLAN

- In 2014-15, Facilities Department conducted benchmarking analysis of campus buildings which identified about **fifty** energy intensive buildings or “**energy hogs**”.
- Representing only **35 percent** of the university’s grounds, these facilities collectively account for approximately **70 percent** of the utility costs associated with operation of the main campus
- Following this study, a comprehensive Five Year Energy Action Plan was developed to concentrate on **ten** “energy hogs” per year

5-YR ENERGY ACTION PLAN

- Each phase of the Plan includes:
 - Conducting **Energy Audits** within selected ten buildings
 - Implementing **Energy Retrofit** projects
 - **Retro-commissioning**
 - Installing **Steam Meters** in the buildings connected to the Power Plant
 - Connecting “energy hogs” to the **Energy Management Platform** (Iconics)

5-YR ENERGY ACTION PLAN

- Phase I (2015-2016) Buildings:

Building ID	Building Name	Area, sq.ft.	Electric, \$	Total Cost, \$
158	Hahn Hall - North	85,051	371,018	900,378
157	Hahn Hall - South	71,106	332,158	794,198
113	Latham Hall	84,277	622,980	866,212
121	Life Sciences 1	71,799	333,435	680,820
140	Vet Med Phase 1	35,960	127,443	161,458
150	Vet Med Phase 2	70,790	250,882	317,842
149	Vet Med Phase 3	66,640	236,174	299,209
118	Litton-Reaves Hall	146,267	468,150	678,929
155	Derring Hall	207,929	359,940	646,441
182	War Memorial Gym	200,961	234,626	528,754
TOTAL		1,040,780	3,336,806	5,874,241

5-YR ENERGY ACTION PLAN

- Phase I (2015-2016) Results:
 - For a combined cost of \$2,500,000, close to \$450,000 in annual energy cost savings were achieved resulting in 5.5 years of payback
 - The list of completed projects includes optimization of pumping system in North Chiller Plant, installation of steam meters in various buildings, energy audits, initial deployment of Energy Management platform.
 - Energy audits revealed a significant number of potential energy saving opportunities which will be implemented in consecutive phases of the Plan

5-YR ENERGY ACTION PLAN

- Phase II (2016-2017) Buildings:

Building ID	Building Name	Area, sq.ft.	Electric, \$	Total Cost, \$
119	Bioinformatics 1	58,285	238,858	334,957
120	Bioinformatics 2	71,560	293,261	411,248
134	Whittemore Hall	155,339	317,581	657,959
136	Goodwin Hall	154,935	295,734	631,021
111	Fralin Hall	44,324	219,580	323,621
156	Davidson Hall	66,023	151,764	334,292
133C	Hancock Hall	63,075	213,247	367,939
381	HABB 1	93,860	58,501	293,687
126	Durham Hall	107,929	242,943	366,533
124-125	GREENHOUSE COMPLEX	59,968	49,807	103,175
TOTAL		1,048,817	2,370,440	4,339,309

5-YR ENERGY ACTION PLAN

- Phase II (2016-2017) Results:
 - For a combined cost of about \$3,260,000, close to \$730,000 in annual energy cost savings are expected resulting in 4.5 years of payback
 - The list of projects includes ventilation system optimization in the labs, building-wide lighting system upgrades, building automation upgrades, retro-commissioning, installation of steam meters, insulation of bare valves and fittings on the steam lines, weatherization of exterior doors, integration of buildings to the Energy Management platform.
 - Similar to Phase I, Energy Audits revealed significant number of potential energy saving opportunities which will be implemented in consecutive phases of the Plan

5-YR ENERGY ACTION PLAN

- Phase III (2017-2018) Buildings:

Building ID	Building Name	Area, sq.ft.	Electric, \$	Total Cost, \$
129	Kelly Hall-ICTAS I	99,411	248,684	481,522
116	ICTAS II	42,190	145,579	263,478
151	McBryde Hall	132,224	127,003	321,955
133	Randolph Hall	165,918	230,118	399,615
112	Cheatham Hall	65,247	191,844	245,814
439-452	Vet Med Research Cluster	70,436	171,648	207,128
174	Torgersen Hall	149,651	281,069	390,648
190-190A	Southgate Building and PS	82,527	186,790	234,117
115	Wallace Hall	103,163	187,645	226,613
110	Engel Hall	45,737	125,401	149,990
TOTAL		956,504	1,895,781	2,920,880

5-YR ENERGY ACTION PLAN

- Phase III (2017-2018) expectations:
 - Received \$3,700,000 from the Office of Budget and Financial Planning
 - Projected annual energy savings of about \$855,000
 - Facilities received approval from OBFP to support the establishment of two base FTE including an Energy Engineer and an Energy Auditor. These two new employees will allow Facilities to build its own team of surveyors, focusing on conducting in-house energy audits.

5-YR ENERGY ACTION PLAN

- In addition to substantial energy savings, the Plan will benefit the university in other ways including improvement of building **performance** and indoor **air quality**, better **lighting**, increased **longevity** of mechanical and lighting systems, and **carbon footprint** reduction.
- Installation of the software platform will greatly improve the energy **accounting** process, provide visualization, and assist with tracking and verification of energy savings