

UNM's ENERGY STORY



Vice President of Lobo Energy

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THE UNIVERSITY OF NEW MEXICO HAD A PROBLEM



FAILING UTILITY
INFRASTRUCTURE

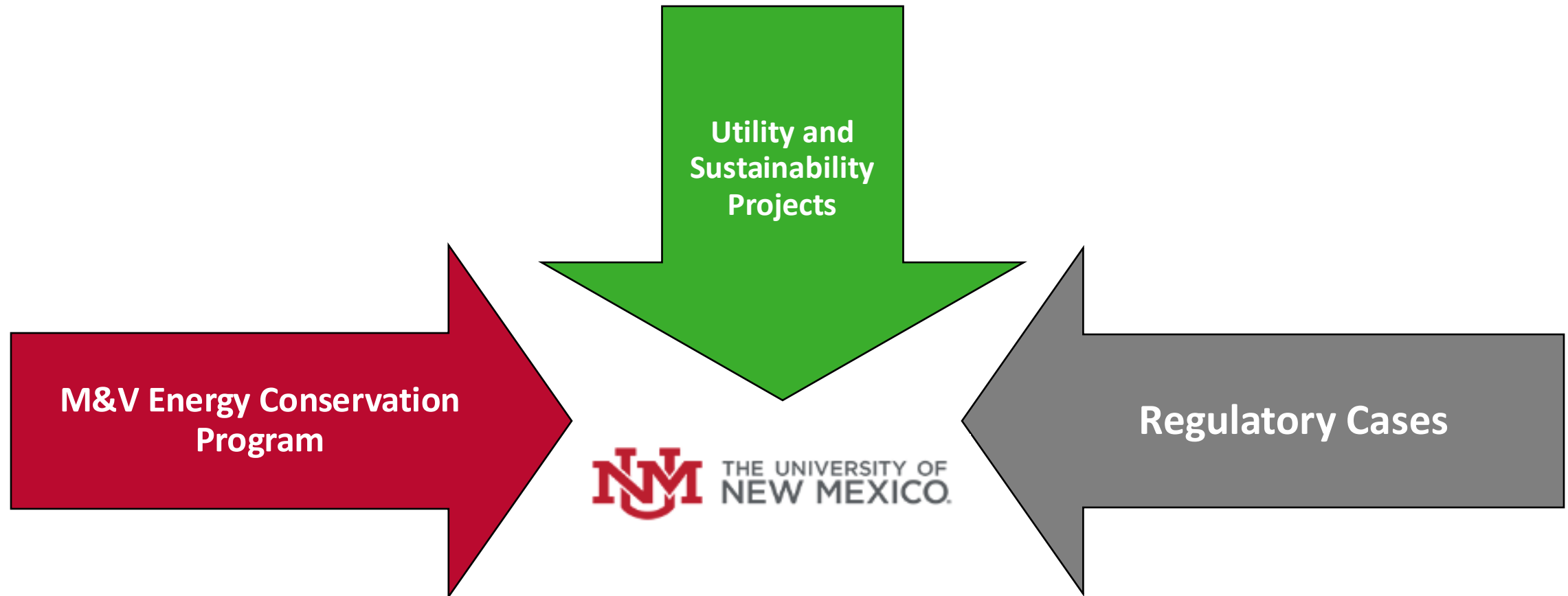


INCREASE IN UTILITY COSTS



AGING EQUIPMENT

UNM CREATED LOBO ENERGY, INCORPORATED



UNM's FIRST FOCUS: PRODUCTION



District Energy System Upgrades

- New Distribution Lines
- Two Cogeneration Units
- New Chilled Water Plant
- Boiler Upgrades
- SMART Metering System

DISTRICT ENERGY SYSTEM SUMMARY REPORT

39%
Reduction in CO₂

**FORD
UTILITIES**



ELE

**14
MW**



CHW

**15,300
Tons**



STM

**243,000
Pounds per
Hour**

UNM's NEXT FOCUS: CONSUMPTION



Energy Reduction in BLDGs

- Measurement and Verification
- Commissioning
- ASHRAE Energy Audits
- Equipment Upgrades
- Maintenance
- Behavior Modification

ENERGY CONSERVATION PROCESS

DATA COLLECTION

Monthly Bills and
Interval Data

AUDIT
PHYSICAL OR ONLINE

CONTINUOUS
COMMISIONING

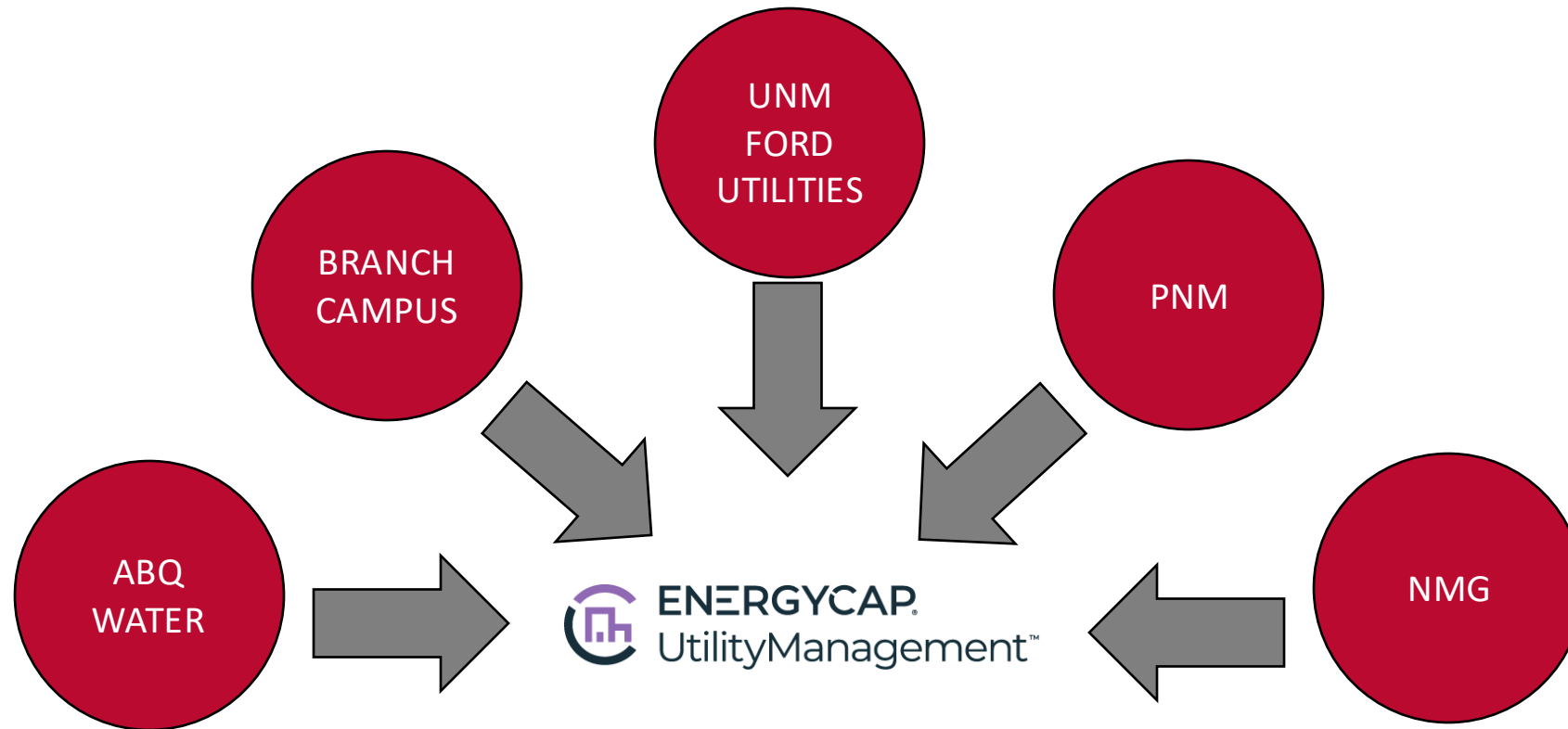
BEHAVIOR
MODIFICATION

COMMUNICATION

IMPROVEMENTS

ENERGY CONSERVATION PROCESS

DATA COLLECTION



ENERGY CONSERVATION PROCESS

Data Collection and Analysis

CAMPUS LEVEL

BUILDING LEVEL

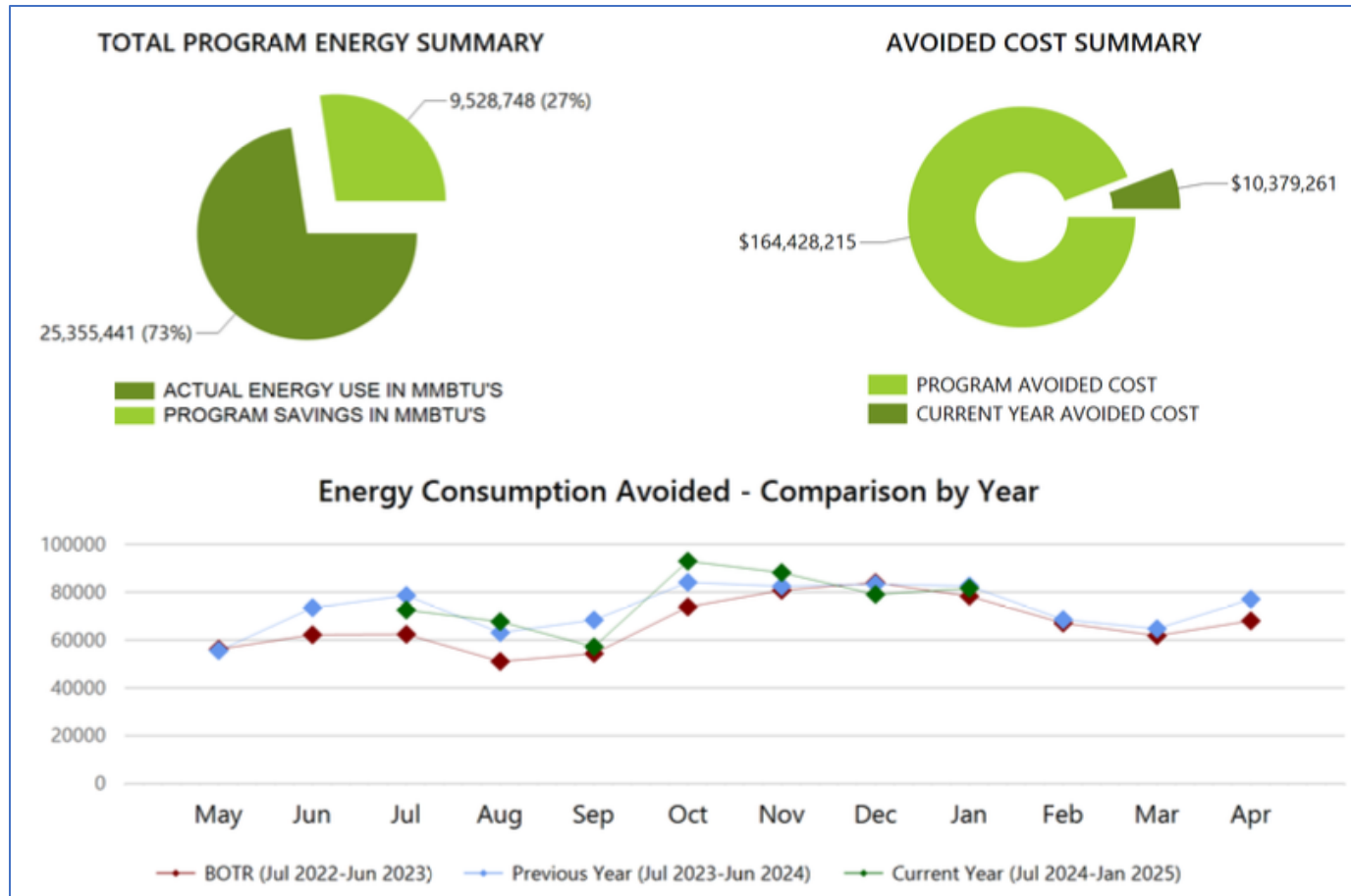
METER LEVEL



START AT A HIGH LEVEL AND WORK YOUR WAY DOWN TO SEE WHERE THE ISSUE STANDS OUT

ENERGY CONSERVATION PROCESS

Campus Level Report (Admin)



ENERGY CONSERVATION PROCESS

Building Level Report (Usage Avoidance)

Use displayed in: MMBTU

Place	BATCC Use	Actual Use	Use Avoidance	Use Avoidance %
[001WL] UNM West (Rio Rancho)	321	273	47	14.8%
[0235-UNMH] UNM Hospital Main	24,194	15,677	8,517	35.2%
[0236-A] CPH (Children's Psychiatric Hospital/Admin)	438	68	371	84.6%
[0236-B] CPH Education Building	152	118	34	22.1%
[0236-C] CPH	71	39	32	45.1%
[0270] Carrie Tingley Hospital	1,251	942	309	24.7%
[0271] Family Health University	536	431	105	19.6%
[0278-D] UNMH Admin- D	17	8	9	54.1%
[0278-F] UNMH Admin-F	12	10	2	18.2%
[0278-G] UNMH Admin-G	2	1	1	56.7%
[0278-I] UNMH Outpatient Financial Services	10	8	3	25.2%
[0278-K] UNMH Admin- 0278-K	8	7	1	7.3%
[0278-M] UNMH Admin	18	2	16	90.3%
[0283] OSIS Clinic	1,363	1,592	(229)	-16.8%
[0286] B Richardson Bldg (Hospital)	5,993	5,615	378	6.3%
[0299] Mental Health Center	1,251	884	368	29.4%
[0345] HOPE Bldg	1,823	1,147	676	37.1%
[0420] UNM Dermatology	145	91	54	37.3%
[0421] Rehab Services	123	36	87	70.7%
[0422] Sleep Disorders Center	87	46	42	47.4%
[0423] Orthopedics	87	40	47	54.1%
[0442] Digestive Disease Clinic	113	105	8	7.3%
[0801] Family Health: Academy	105	58	47	45.0%
[0804] Family Health (McMahon - West Side)	210	201	9	4.4%
[0805] Family Health (Central)	143	139	4	2.9%
[0807] Unser Clinic	153	167	(14)	-9.0%
[0808] Eubank Clinic	111	135	(24)	-21.5%
[1049] Lobo Clinic	218	87	131	60.1%
Totals:	38,957	27,925	11,031	28.3%

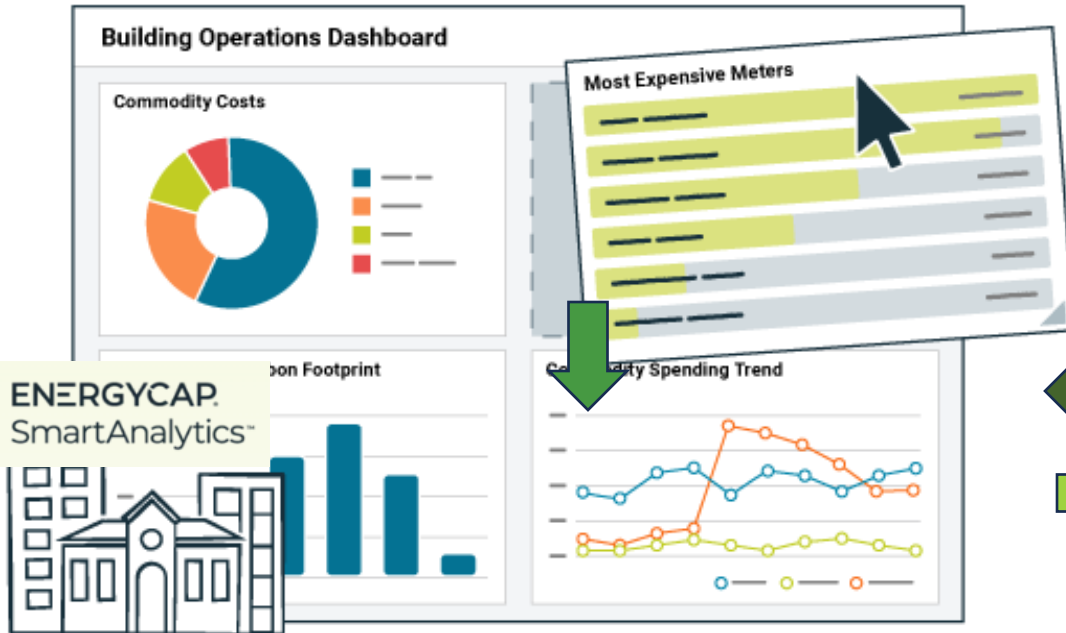
ENERGY CONSERVATION PROCESS

Meter Level Report (Trends)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Education,Travelstead,Masely,Simpson,Kiva,Manzanit ELAIB_KW-064-A-0	2013	22,785	21,062	21,322	21,417	18,123	21,458	21,693	22,354	23,980	23,495	22,160	18,964
	2014	21,319	21,112	20,721	22,740	20,088	18,620	21,390	20,809	21,889	22,629	20,341	17,744
	2015	25,889	19,697	20,616	20,859	18,554	18,584	17,442	18,735	19,760	20,052	19,020	16,625
	2016	18,996	19,555	19,353	19,365	16,316	17,328	17,876	17,909	19,422	20,347	21,613	19,554
	2017	21,334	19,608	20,218	20,283	18,435	18,224	19,511	19,772	19,406	20,708	19,672	18,083
	2018	20,443	19,497	19,781	18,923	17,707	18,251	18,898	20,737	19,599	21,361	21,019	19,816
	2019	22,403	20,462	20,257	20,406	18,304	17,646	18,097	0	0	0	0	0
	2020	0	14,921	17,214	12,532	11,068	12,142	14,804	14,350	13,360	13,897	14,666	15,552
	2021	15,939	14,480	15,296	14,676	14,585	16,541	18,388	21,302	21,230	22,817	23,495	24,937
	2022	24,078	21,728	23,393	21,128	20,130	19,759	18,107	20,223	20,350	21,379	22,049	16,660
	2023	19,641	18,612	20,701	17,079	16,355	16,568	17,075	17,938	17,528	18,465	18,541	18,315
	2024	19,697	17,485	16,939	16,780	16,387	16,708	15,159	17,289	18,363	17,087	16,683	15,744
	2025	16,698	16,807	17,882	0	0	0	0	0	0	0	0	0
Education,Travelstead,Masely,Simpson,Kiva,Manzanit STM-LBSHR-COR-INST-064-A-0	2007					968,900	593,300	156,300	66,400	84,100	592,200	1,145,900	1,567,400
	2008	1,562,616	1,208,442	820,842	586,937	339,674	142,500	145,200	29,500	384,900	1,152,853	1,270,205	1,584,100
	2009	1,598,231	1,228,572	798,711	509,939	81,323	27,000	21,200	15,400	55,697	357,381	928,452	1,112,766
	2010	1,257,298	970,810	600,528	329,724	121,628	48,800	48,500	51,900	76,100	387,772	872,214	1,523,489
	2011	1,417,342	910,922	686,229	476,359	354,166	123,600	16,600	2,100	30,100	668,000	876,134	1,113,472
	2012	1,109,909	734,764	414,479	204,657	68,274	2,100	2,100	4,800	50,000	264,091	692,233	473,495
	2013	969,200	634,900	330,700	275,900	60,600	2,000	2,100	2,100	2,000	220,100	503,800	662,000
	2014	827,311	647,404	373,390	237,736	116,003	4,152	2,027	2,033	1,952	98,295	549,765	825,100
	2015	893,853	678,660	439,009	282,857	95,674	2,408	2,451	2,025	2,080	234,391	608,961	779,138
	2016	834,658	747,790	394,716	242,001	57,543	2,823	2,559	2,264	2,229	63,433	485,940	623,601

SMART ANALYTICS

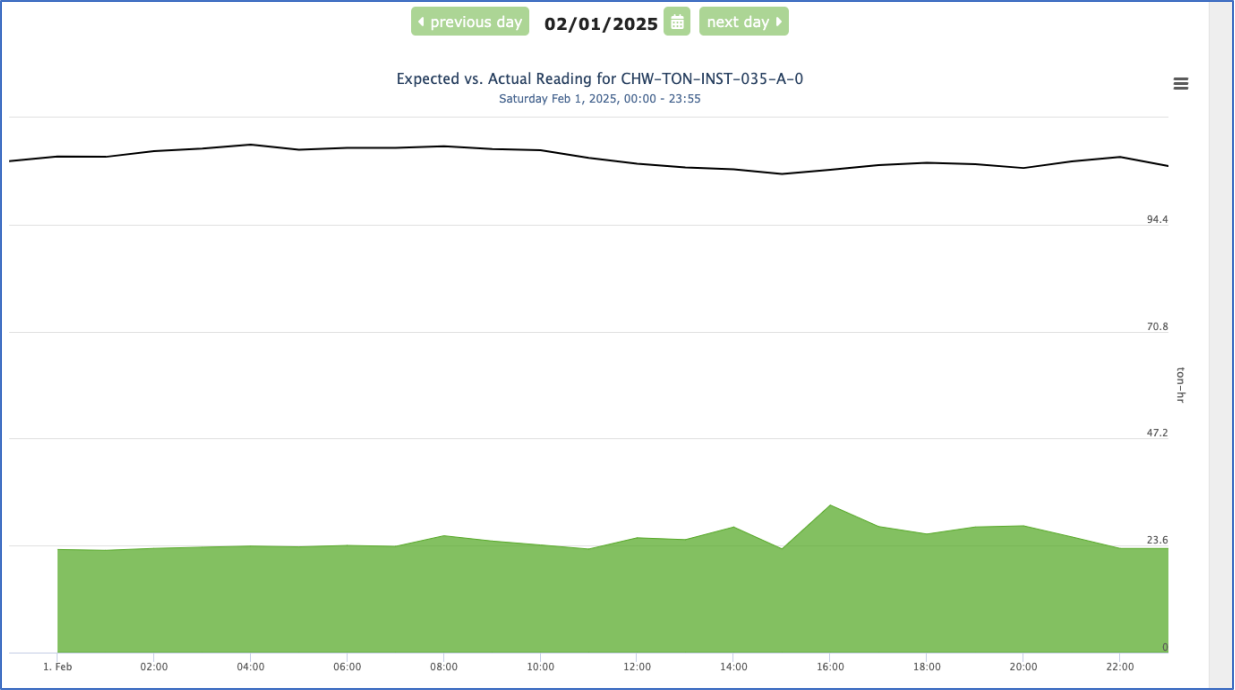
Interval Data Analysis



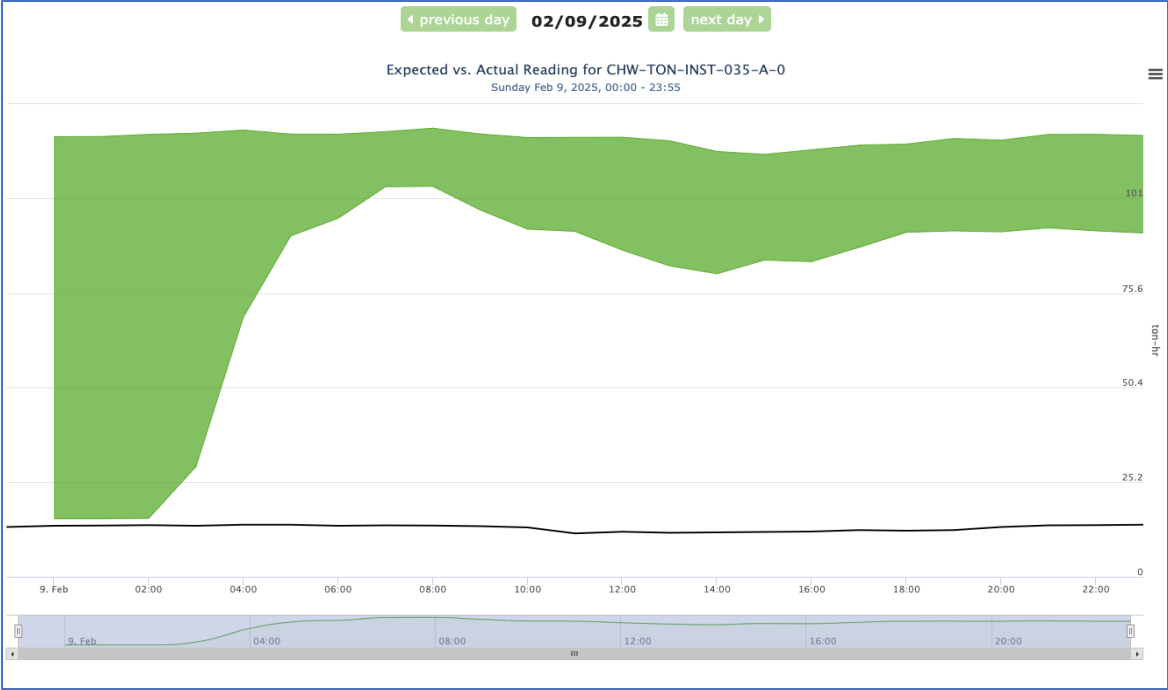
ENERGY CONSERVATION PROCESS

Smart Analytics

ISSUE FOUND



ISSUE RESOLVED



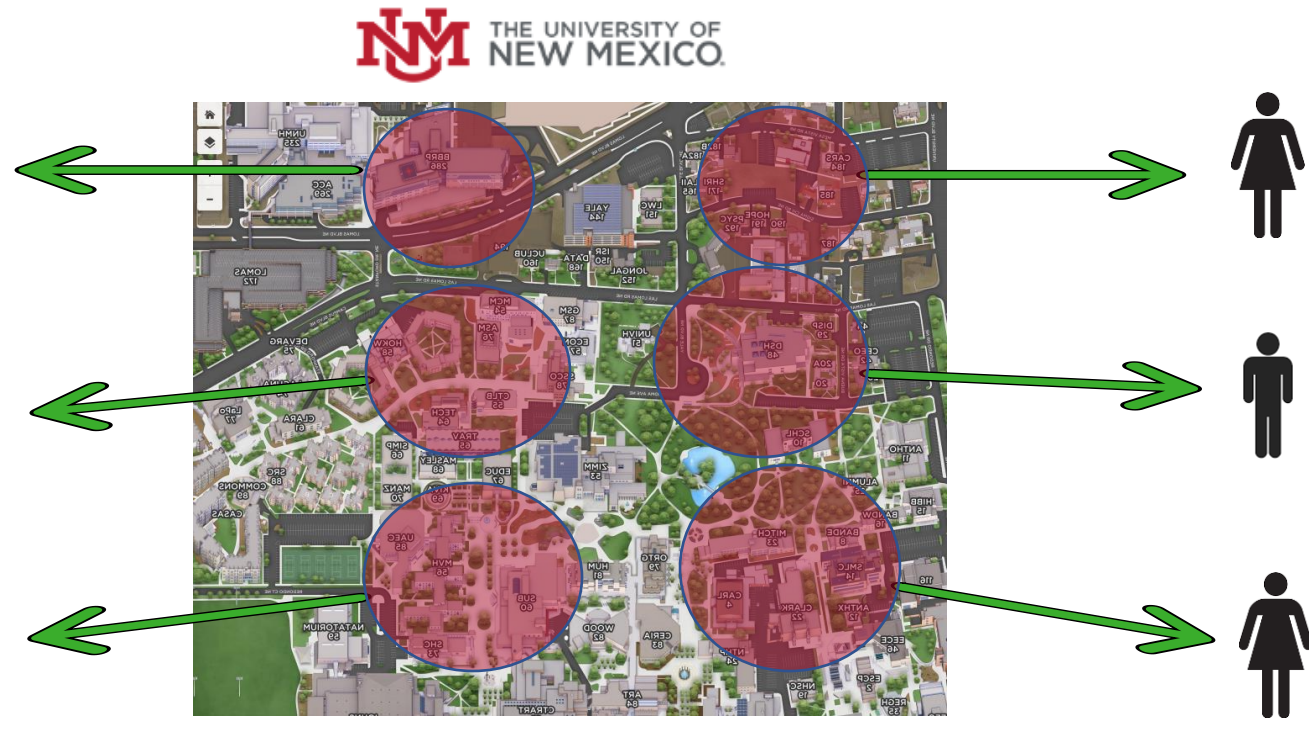
ENERGY CONSERVATION SPECIALISTS

DEDICATED FOCUS

ENERGY AUDIT
PHYSICAL OR ONLINE

CONTINUOUS
COMMISSIONING

BEHAVIOR
MODIFICATION



ENERGY CONSERVATION SPECIALISTS

DEDICATED FOCUS

COMMUNICATION



IMPROVEMENTS

- Get to know your occupants and maintenance team.
- Make work orders or make direct contact with correct personnel when you find issues in the buildings.
- Create presentations for the different stakeholders.
- Apply for awards or recognize your champions.
- Communicate with building coordinators to manage each facility efficiently when the building is unoccupied.

ENERGY CONSERVATION PROCESS

START OVER AGAIN

DATA COLLECTION

Monthly Bills and
Interval Data

AUDIT
PHYSICAL OR ONLINE

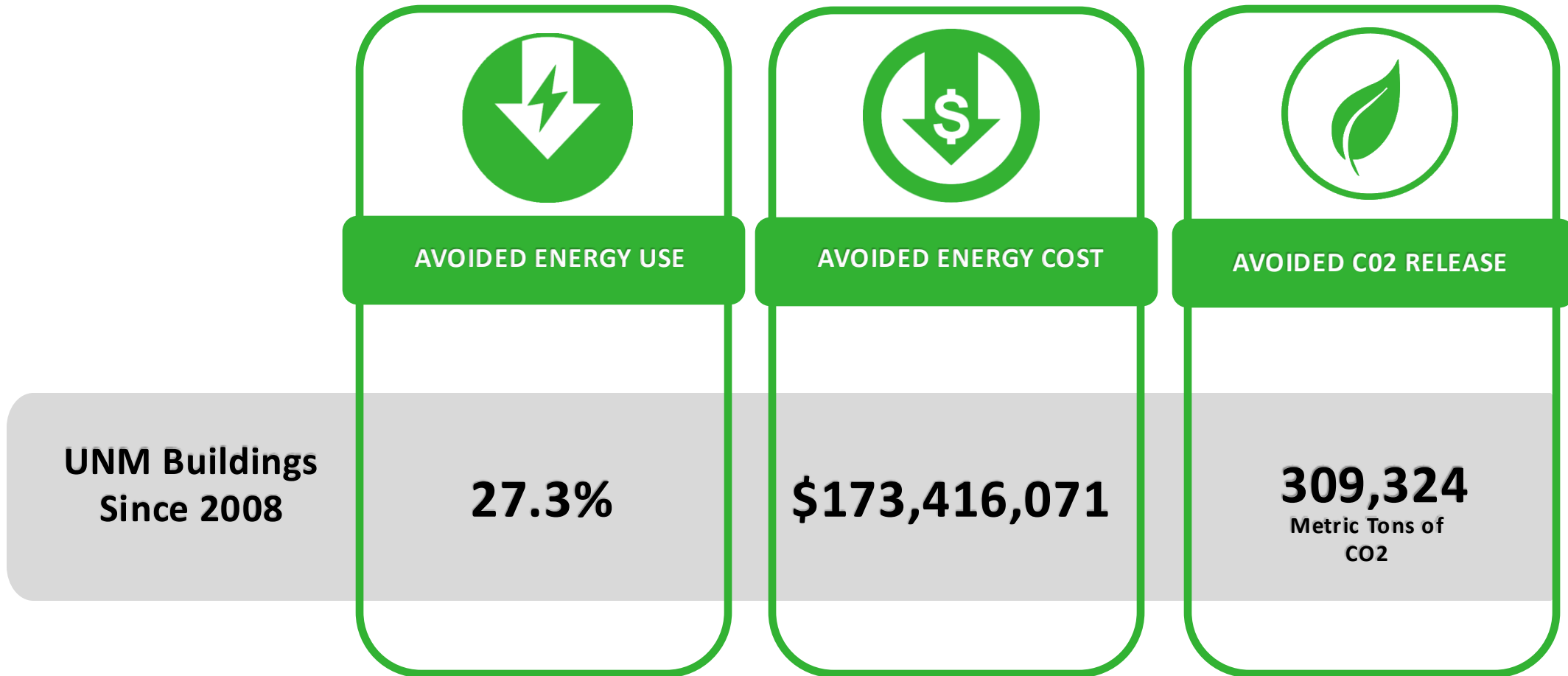
CONTINUOUS
COMMISSIONING

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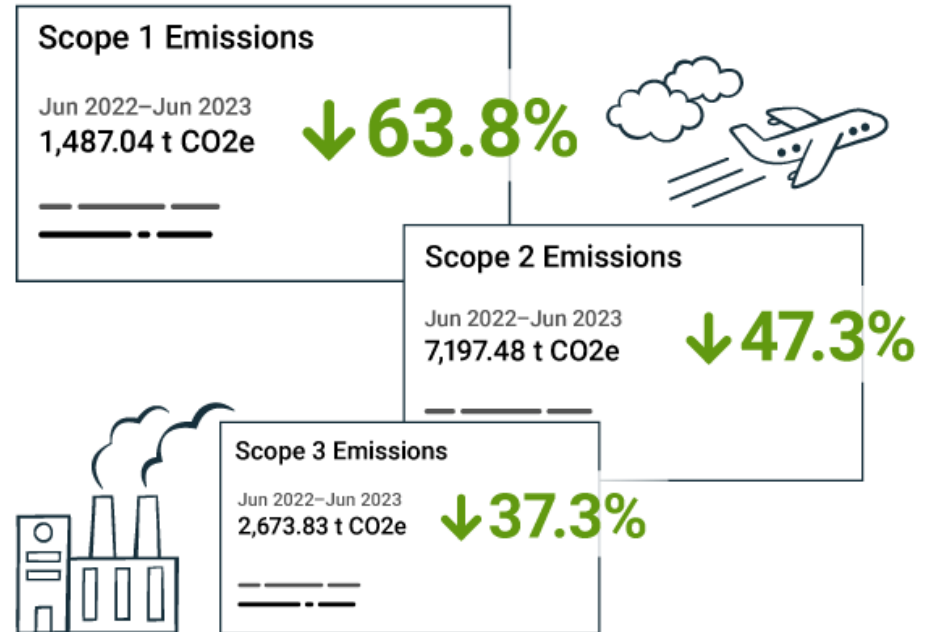
IMPROVEMENTS

ENERGY CONSERVATION SUMMARY REPORT



CARBON HUB

Financial Grade Carbon Accounting



LEI ADDS CARBONHUB



Utility Data



Automatic Transfer

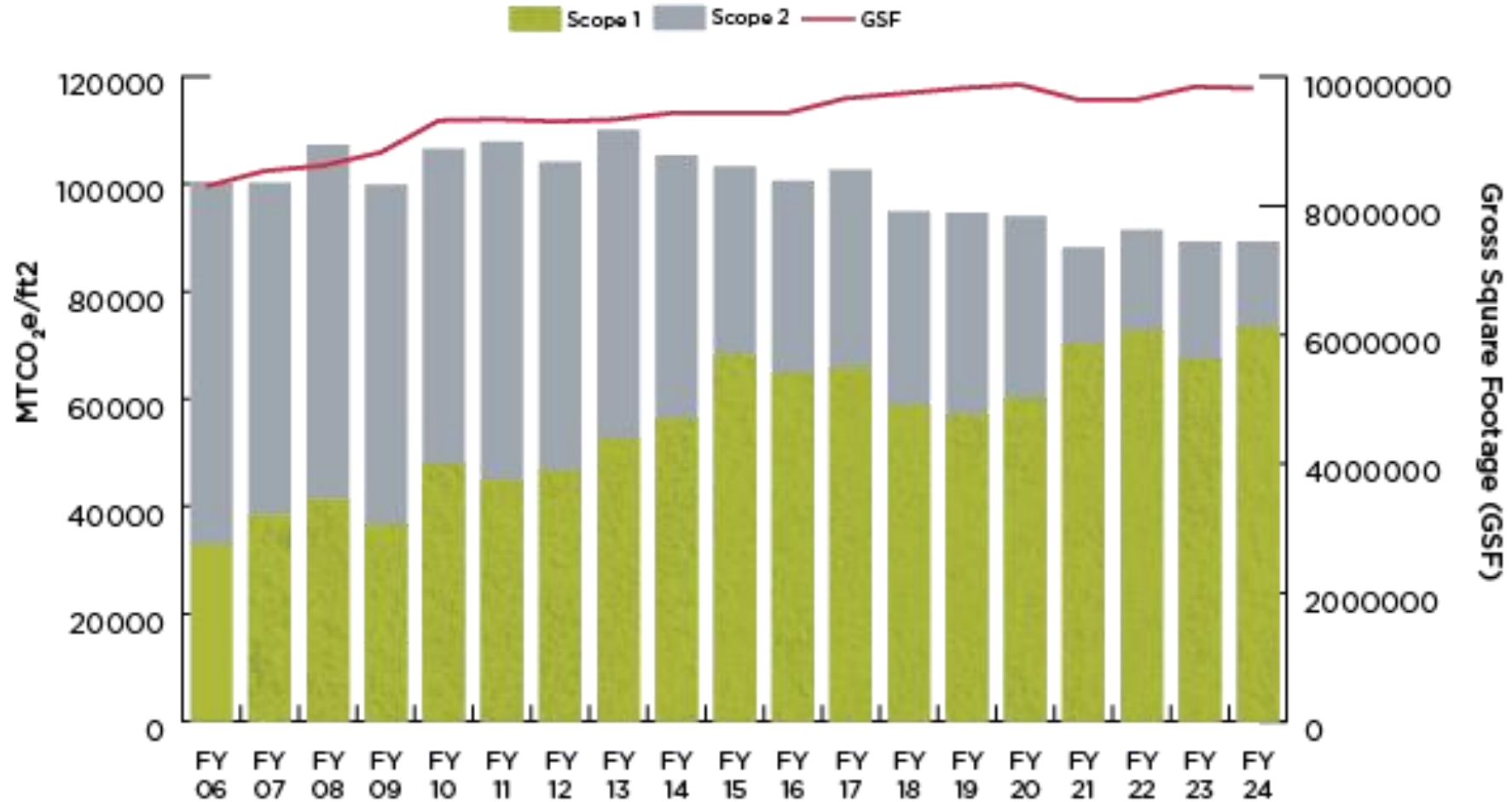


Emission Sources



Assign CO₂ Factor

UNM's Green House Gas Inventory Since FY 06



Current Decarbonization Goals



More Data Collection



Sustainability Plan



Utility Plan



Community Engagement

QUESTIONS?



Vice President of Lobo Energy

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