

Notice of Meeting

UNIVERSITY OF HAWAI'I

BOARD OF REGENTS COMMITTEE ON RESEARCH AND INNOVATION

Members: Regents Bal (Chair), Yuen (Vice-Chair), Higa, Putnam, Shinsato, Tagorda, and Wilson

Date: Thursday, May 24, 2018

Time: 10:30 a.m.

Place: University of Hawai'i at Mānoa
Information Technology Building
1st Floor Conference Room 105A/B
2520 Correa Road
Honolulu, Hawai'i 96822

AGENDA

I. Call Meeting to Order

II. Approval of Minutes of the February 7, 2018 Meeting

- III. Public Comment Period for Agenda Items:** All written testimony on agenda items received after posting of this agenda and up to 24 hours in advance of the meeting will be distributed to the board. Late testimony on agenda items will be distributed to the board within 24 hours of receipt. Written testimony may be submitted via US mail, email at bor@hawaii.edu, or facsimile at 956-5156. Individuals submitting written testimony are not automatically signed up for oral testimony. Registration for oral testimony on agenda items will be provided at the meeting location 15 minutes prior to the meeting and closed once the meeting begins. Oral testimony is limited to three (3) minutes. All written testimony submitted are public documents. Therefore, any testimony that is submitted verbally or in writing, electronically or in person, for use in the public meeting process is public information.

IV. Agenda Items

A. For Information & Discussion

1. Update on Patent and Copyright Policies
2. Update on University of Hawai'i F&A (Indirect) Cost Rate Proposal
3. FY18 Q3 Extramural Awards Report
4. Update on Strategic Research & Innovation/Hawai'i Innovation Initiative Metrics
5. Update on Office of Innovation & Commercialization (OIC)
6. Applied Research Laboratory (ARL) Briefing
7. Committee Annual Review

V. Adjournment

Item IV.A.1.

**Update on Patent &
Copyright Policies**

NO MATERIALS

ORAL REPORT

Item IV.A.2.

**Update on UH F&A
(Indirect) Cost Rate
Proposal**

NO MATERIALS

ORAL REPORT



UNIVERSITY
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UNIVERSITY OF HAWAII
BOARD OF REGENTS

18 MAY 16 P5:08

Office of the Vice President for Research and Innovation

UH DTS #18899

RECEIVED

May 16, 2018

'18 MAY 16 A10:52

MEMORANDUM

TO: Eugene Bal III, Chairperson, BOR Committee on Research and Innovation

VIA: David Lassner, President

FROM: Vassilis L. Syrmos, Vice President for Research and Innovation

SUBJECT: BOR COMMITTEE ON RESEARCH AND INNOVATION AGENDA MATERIALS FOR MAY 2018 MEETING

Please find attached the following materials that will be discussed at the May 24, 2018 BOR Committee on Research and Innovation meeting:

- A. For Information & Discussion:
 1. Update on Patent and Copyright Policies (**VPRI verbal*)
 2. Update on University of Hawai'i F&A (Indirect) Cost Rate Proposal (**VPRI verbal*)
 3. FY18 Q3 Extramural Awards Analysis (**VPRI presentation*)
 - a. FY18 Q3 Extramural Awards Analysis Report
 - b. FY18 Q3 Research and Innovation Metrics Summary
 - c. FY18 Monthly Report of Extramural Awards (as of April 30, 2018)
 4. Update on Strategic Research & Innovation/Hawai'i Innovation Initiative Metrics (**VPRI presentation*)
 5. Update on Office of Innovation & Commercialization (OIC) Director (**OIC Director presentation*)
 6. Applied Research Laboratory (ARL) Briefing (**VPRI presentation on behalf of ARL Director*)

Attachments

FY18 Q3 Extramural Award Analysis

BOR Committee on Research and Innovation Meeting
May 24, 2018



Overview

- FY18 Q3 Recap
- Significant Awards by Campus
- Award Amounts by Location
- Actuals vs. Forecasts and Targets

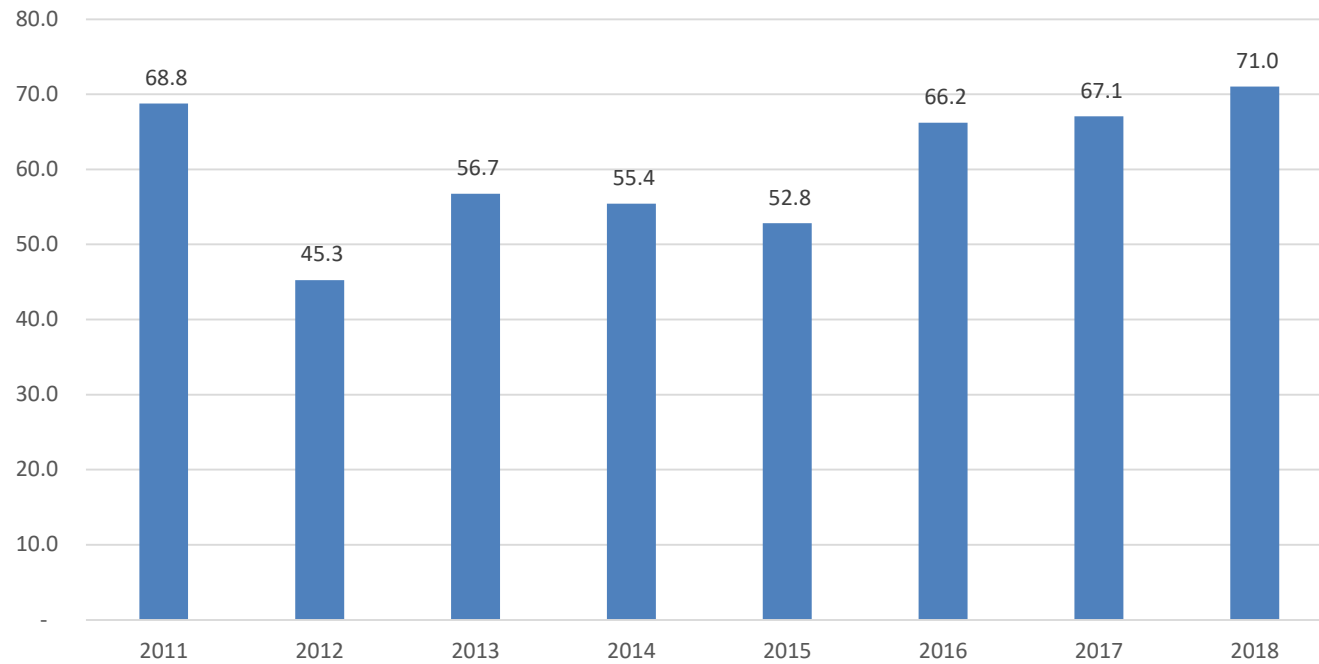


FY18 Q3 Recap

- FY18 Q3 total is \$71 million; 5.9% more than FY17 Q3 (\$67.1 million)
- Though Q3 performance has improved from FY15 Q3 to FY18 Q3, Q2 and Q3 have switched places. Thus, Q2 and Q3 remain low performing quarters.
- Strong FY18 Q4 is needed to finish above FY 2017.



Q3 Extramural Awards
(\$ millions)



	2011	2012	2013	2014	2015	2016	2017	2018
Q1	251.5	203.2	178.1	166.5	191.1	165.8	181.8	164.5
Q2	78.8	47.5	74.8	74.7	77.0	56.9	59.5	62.0
Q3	68.8	45.3	56.7	55.4	52.8	66.2	67.1	71.0
As of Q3	399.1	296.0	309.7	296.6	320.9	288.9	308.4	297.5
Q4	89.5	139.9	100.1	95.7	104.8	102.4	78.6	TBD
FY	488.6	435.9	409.8	392.3	425.7	391.3	387.0	297.5



FY18 Q3 Significant Awards by Campus

Campus	Sponsor Type	Sponsor	Project Title	Amount
Mānoa	Federal	Department of Defense	Asia Pacific Research Initiative for Sustainable Energy Systems 2017 (APRISES17)	6,040,103
Hilo	Nonprofit	UH Foundation	GBMF Capacity Building Imiloa 2017	413,820
West O'ahu	Nonprofit	Hawaiian Legacy Foundation	`Ulu`ulu Preservation of Hawaiian Legacy Foundation - Music	45,000
Hawai'i CC	Nonprofit	UH Foundation	KS 13th Year Scholarship Program - Hawaii CC Elama	60,000
Honolulu CC	Nonprofit	UH Foundation	ATD - Integrated Planning and Advising for Student Successes	83,331
Kapi'olani CC	N/A	N/A	N/A	N/A
Kaua'i CC	N/A	N/A	N/A	N/A
Leeward CC	N/A	N/A	N/A	N/A
Maui College	State and Local	Department of Human Services	Ongoing Maintenance and Support for SHAKA and ShakaTown Online Web Portals	1,630,185
Windward CC	State and Local	Department of Human Services	Learning to Grow Project	785,632
UH System	Federal	Department of Defense	University of Hawaii Pacific Disaster Center (UoH PDC) Cooperative Agreement	2,465,955



FY18 Q3 Amounts by Location (\$ millions)

Campus	2015	2016	2017	2018	2018-17 Change
Mānoa	38.7	55.2	57.3	60.1	4.9%
Hilo	2.0	1.6	1.5	1.7	15.1%
West O'ahu	0.2	0.0	0.2	0.0	-70.0%
Hawai'i CC	0.7	0.0	0.0	0.1	151.0%
Honolulu CC	0.7	0.1	0.0	0.1	140.3%
Kapi'olani CC	0.7	0.2	1.2	0.0	-100.0%
Kaua'i CC	0.7	0.0	0.0	0.0	-105.6%
Leeward CC	0.7	0.0	0.3	(0.2)	-153.3%
Maui College	1.3	0.2	0.1	2.0	1979.6%
Windward CC	0.7	0.6	0.1	0.8	778.0%
UH System	6.4	8.3	6.4	6.4	0.7%
TOTAL	52.8	66.2	67.1	71.0	5.9%



Major Changes by Location

- UH Mānoa – Approximately 12 units accounted for the overall net increase

Unit	Change
Coll. of Education	2.3m
Coll. of Engineering	-0.9m
Coll. of Natural Sciences	-2.4m
Coll. of Social Sciences	1.8m
Coll. of Tropical Agriculture & Human Resources	2.0m
Institute for Astronomy	-0.9m
John A Burns School of Medicine	6.6m
Sch. of Ocean, Earth Science & Technology	-0.8m
University of Hawaii Cancer Center	-2.4m
Vice Chancellor, Academic Affairs	-0.8m
Water Resources Research Center	-0.8m
TOTAL	3.6m



Major Changes by Location

- Kapi'olani Community College
 - There were no awards in FY18 Q3 compared to FY17 Q3.
- UH Maui College
 - Compared to FY17 Q3, there were two new awards totaling \$1.9 million, including the \$1.6 million award from the Hawai'i Department of Human Services.
- Windward Community College
 - Timing of \$785,632 Hawai'i Department of Human Services award (received in FY17 Q2 as opposed to FY18 Q3).



Actuals vs. Forecasts and Targets

- Overall results for FY18 Q3 were about \$13.9 million more; or 24.3% of forecast and 6.4% of target
- However, FY 18 year-to-date results remain short of forecast and target



OVERALL

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	175.1	204.9	164.5	-6.1%	-19.7%
Q2	73.9	85.7	62.0	-16.1%	-27.7%
Q3	57.1	66.7	71.0	24.3%	6.4%
Total	306.1	357.3	297.5	-2.8%	-16.7%

UH Mānoa

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	136.1	159.4	112.6	-17.3%	-29.4%
Q2	57.6	66.7	53.9	-6.4%	-19.2%
Q3	44.4	51.9	60.1	35.4%	15.8%
Total	238.1	278.0	226.6	-4.8%	-18.5%



UH Hilo

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	10.1	11.8	7.5	-25.7%	-36.4%
Q2	4.2	4.9	0.9	-78.6%	-81.6%
Q3	3.2	3.8	1.7	-46.9%	-55.3%
Total	17.5	20.5	10.1	-42.3%	-50.7%

UH West O'ahu

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	0.8	0.9	5.1	400.0%	400.0%
Q2	0.3	0.4	0.6	100.0%	50.0%
Q3	0.3	0.3	0.0	-100.0%	-100.0%
Total	1.4	1.6	5.7	307.1%	256.3%



UH Community Colleges

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	9.1	10.6	24.5	169.2%	131.1%
Q2	3.8	4.4	1.5	-60.5%	-65.9%
Q3	3.0	3.5	2.8	-6.7%	-20.0%
Total	15.9	18.5	28.8	81.1%	55.7%

UH System

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	19.0	22.2	14.8	-22.1%	-33.3%
Q2	8.0	9.3	5.1	-36.3%	-45.2%
Q3	6.2	7.2	6.4	3.2%	-11.1%
Total	33.2	38.7	26.3	-20.8%	-32.0%



Extramural Awards FY18 Q3 Report

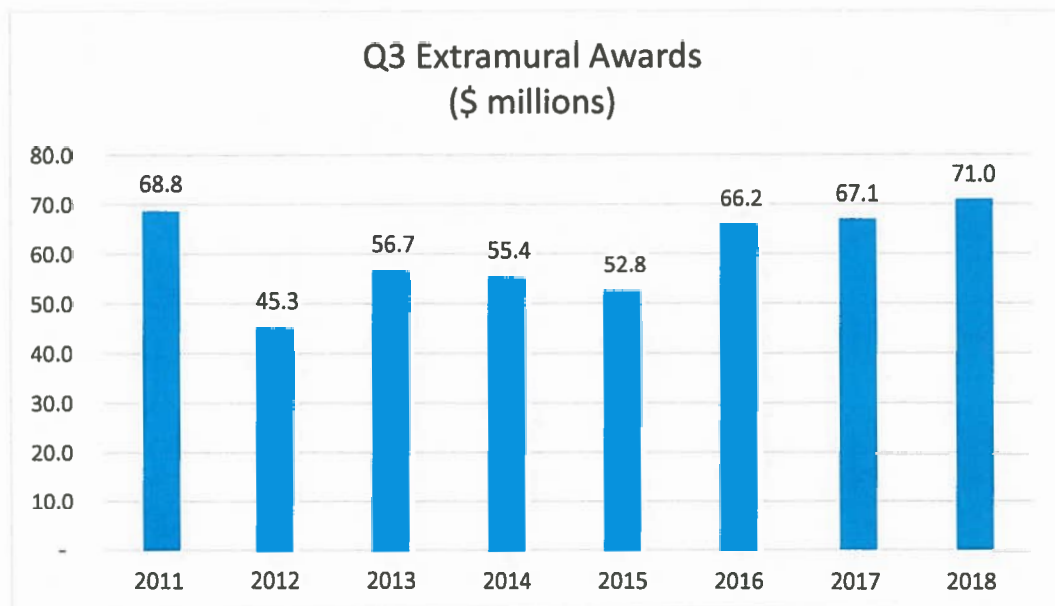
I. Summary

Awards for the third quarter of FY 18 were \$71 million, which was around \$3.9 million more than FY17 Q3 (a 5.9% increase). Although the Q3 performance has improved from prior years, Q2 and Q3 remain low performing quarters. A strong FY18 Q4 is needed to finish above FY 2017.

II. Quarterly Performance Metrics

Awards for FY18 Q3 were around \$3.9 million more than FY17 Q3 (a 5.9% increase). Although the Q3 performance has increased since FY 2015, Q2 and Q3 have switched places performance wise. Thus, Q2 and Q3 have been considered low performing quarters.

Quarterly Extramural Awards								
\$ millions								
	2011	2012	2013	2014	2015	2016	2017	2018
Q1	251.5	203.2	178.1	166.5	191.1	165.8	181.8	164.5
Q2	78.8	47.5	74.8	74.7	77.0	56.9	59.5	62.0
Q3	68.8	45.3	56.7	55.4	52.8	66.2	67.1	71.0
As of Q3	399.1	296.0	309.7	296.6	320.9	288.9	308.4	297.5
Q4	89.5	139.9	100.1	95.7	104.8	102.4	78.6	TBD
FY	488.6	435.9	409.8	392.3	425.7	391.3	387.0	297.5



III. Significant Awards by Campus

During FY18 Q3, UH received 371 awards from 169 different sponsors. The following table reports the largest awards received this quarter by campus. Unlike FY17 Q3, in which every campus received an award, FY18 Q3 had three (3) campuses without awards. Performance was typical with most significant awards coming from non-federal sponsors and less than \$500,000.

Campus	Sponsor Type	Sponsor	Project Title	Amount
Mānoa	Federal	Department of Defense	Asia Pacific Research Initiative for Sustainable Energy Systems 2017 (APRISES17)	6,040,103
Hilo	Nonprofit	UH Foundation	GBMF Capacity Building Imiloa 2017	413,820
West O'ahu	Nonprofit	Hawaiian Legacy Foundation	'Ulu`ulu Preservation of Hawaiian Legacy Foundation - Music	45,000
Hawai'i CC	Nonprofit	UH Foundation	KS 13th Year Scholarship Program - Hawaii CC Elama	60,000
Honolulu CC	Nonprofit	UH Foundation	ATD - Integrated Planning and Advising for Student Successes	83,331
Kapi'olani CC	N/A	N/A	N/A	N/A
Kaua'i CC	N/A	N/A	N/A	N/A
Leeward CC	N/A	N/A	N/A	N/A
Maui College	State and Local	Department of Human Services	Ongoing Maintenance and Support for SHAKA and ShakaTown Online Web Portals	1,630,185
Windward CC	State and Local	Department of Human Services	Learning to Grow Project	785,632
UH System ¹	Federal	Department of Defense	University of Hawaii Pacific Disaster Center (UoH PDC) Cooperative Agreement	2,465,955

The APRISES award repeated as UH Mānoa's top Q3 award. Incremental funding for the Pacific Disaster Center (PDC) replaced incremental funding for the Maui High Performance Computing Center (MHPCC) as UH System's top Q3 award. Only the \$1.6 million Hawai'i Department of Human Services award to Maui College is a new large award.

IV. Award Trends by Campus

Only four (4) campuses had substantial dollar value changes:

- 1) UH Mānoa = \$2.8 million dollar increase
- 2) Kapi'olani Community College = \$1.2 million decrease
- 3) UH Maui College = \$1.9 million increase
- 4) Windward Community College = \$700K increase

¹ UH System represents units under Vice Presidents that receive extramural funding. Examples include the P20 and Gear Up grants under the VP for Academic Affairs; Maui High Performance Computing Center and Pacific Disaster Center contracts under the VP for Information Technology; Applied Research Laboratory task orders under the VP for Research and Innovation; and the Pacific Business Center Program under the VP for Community Colleges.

Q3 Award Amounts by Location
\$ millions (rounded)

Campus	2015	2016	2017	2018	2018-17 Change²
Mānoa	38.7	55.2	57.3	60.1	4.9%
Hilo	2.0	1.6	1.5	1.7	15.1%
West O'ahu	0.2	0.0	0.2	0.0	-70.0%
Hawai'i CC	0.7	0.0	0.0	0.1	151.0%
Honolulu CC	0.7	0.1	0.0	0.1	140.3%
Kapi'olani CC	0.7	0.2	1.2	0.0	-100.0%
Kaua'i CC	0.7	0.0	0.0	0.0	-105.6%
Leeward CC	0.7	0.0	0.3	(0.2)	-153.3%
Maui College	1.3	0.2	0.1	2.0	1979.6%
Windward CC	0.7	0.6	0.1	0.8	778.0%
UH System	6.4	8.3	6.4	6.4	0.7%
TOTAL	52.8	66.2	67.1	71.0	5.9%

Quarterly Analysis

Major dollar increases and decreases are attributed as follows:

UH Mānoa

- Approximately 12 units accounted for the overall net increase.

Unit	Change
Coll. of Education	2.3m
Coll. of Engineering	-0.9m
Coll. of Natural Sciences	-2.4m
Coll. of Social Sciences	1.8m
Coll. of Tropical Agriculture & Human Resources	2.0m
Institute for Astronomy	-0.9m
John A Burns School of Medicine	6.6m
Sch. of Ocean, Earth Science & Technology	-0.8m
University of Hawaii Cancer Center	-2.4m
Vice Chancellor, Academic Affairs	-0.8m
Water Resources Research Center	-0.8m
TOTAL	3.6m

Kapi'olani Community College

- There were no awards in FY18 Q3 compared to FY17 Q3.

UH Maui College

- Compared to FY17 Q3, there were two (2) new awards totaling \$1.9 million, including the \$1.6 million award from the Hawai'i Department of Human Services.

Windward Community College

- The increase is attributed to timing of the \$785,632 Hawai'i Department of Human Services award. The award was received in FY17 Q2 as opposed to FY18 Q3.

² The percent change over the prior year is calculated using the actual figures not the rounded figures.

Year-to-Date Analysis

Year-to-date, UH Mānoa and UH System have the largest dollar decreases (\$2.6 million and \$9.6 million respectively). UH Mānoa's Q3 helped reduce its year-to-date difference from Q2. Although the UH System year-to-date difference in Q3 increased from Q2, the observations made in the Q2 report continue for Q3.

Campus Group	Q1+Q2+Q3 FY 2017	Q1+Q2+Q3 FY 2018	Difference
UH Mānoa	229,254,199	226,623,330	(2,630,869)
UH Hilo	8,762,440	10,044,713	1,282,273
UH West O'ahu	5,531,172	5,767,998	393,321
UH Community Colleges	28,830,396	28,805,554	(24,842)
UH System	36,003,619	26,309,884	(9,693,735)
TOTAL	308,381,826	297,551,479	(10,830,347)

V. Forecast vs. Actuals

Overall results for FY18 Q3 were about \$13.9 million more, or 24.3% of forecast and 6.4% of target. Results were aided by an increase in UH Mānoa's awards. However, FY 18 year-to-date results remain short of forecast and target.

OVERALL

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	175.1	204.9	164.5	-6.1%	-19.7%
Q2	73.9	85.7	62.0	-16.1%	-27.7%
Q3	57.1	66.7	71.0	24.3%	6.4%
Total	306.1	357.3	297.5	-2.8%	-16.7%

UH Mānoa

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	136.1	159.4	112.6	-17.3%	-29.4%
Q2	57.6	66.7	53.9	-6.4%	-19.2%
Q3	44.4	51.9	60.1	35.4%	15.8%
Total	238.1	278.0	226.6	-4.8%	-18.5%

UH Hilo

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	10.1	11.8	7.5	-25.7%	-36.4%
Q2	4.2	4.9	0.9	-78.6%	-81.6%
Q3	3.2	3.8	1.7	-46.9%	-55.3%
Total	17.5	20.5	10.1	-42.3%	-50.7%

UH West O'ahu

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	0.8	0.9	5.1	400.0%	400.0%
Q2	0.3	0.4	0.6	100.0%	50.0%
Q3	0.3	0.3	0.0	-100.0%	-100.0%
Total	1.4	1.6	5.7	307.1%	256.3%

UH Community Colleges

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	9.1	10.6	24.5	169.2%	131.1%
Q2	3.8	4.4	1.5	-60.5%	-65.9%
Q3	3.0	3.5	2.8	-6.7%	-20.0%
Total	15.9	18.5	28.8	81.1%	55.7%

UH System

FY 2018	Forecast	Target	Actual	Forecast Variance	Target Variance
Q1	19.0	22.2	14.8	-22.1%	-33.3%
Q2	8.0	9.3	5.1	-36.3%	-45.2%
Q3	6.2	7.2	6.4	3.2%	-11.1%
Total	33.2	38.7	26.3	-20.8%	-32.0%

Extramural Sponsor Awards Quarterly Summary

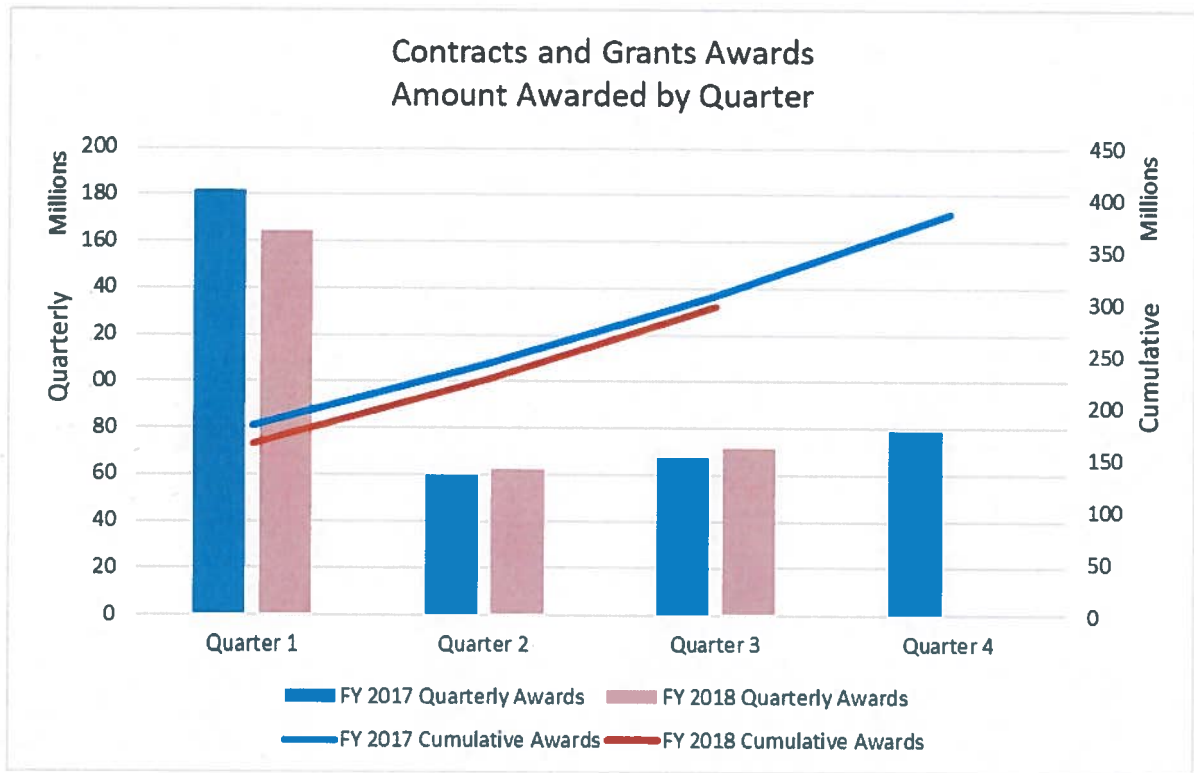
<u>Program Type</u>	Jan 1 - Mar 31 2018		Jan 1 - Mar 31 2017	
	<u>Count</u>	<u>Amount</u>	<u>Count</u>	<u>Amount</u>
Research	231	\$ 44,691,990	233	\$ 44,860,874
Non-Research	140	\$ 27,198,226	161	\$ 22,517,214
<u>Total</u>	<u>371</u>	<u>\$ 71,890,216</u>	<u>394</u>	<u>\$ 67,378,088</u>

Note: The detailed award listing is available at:

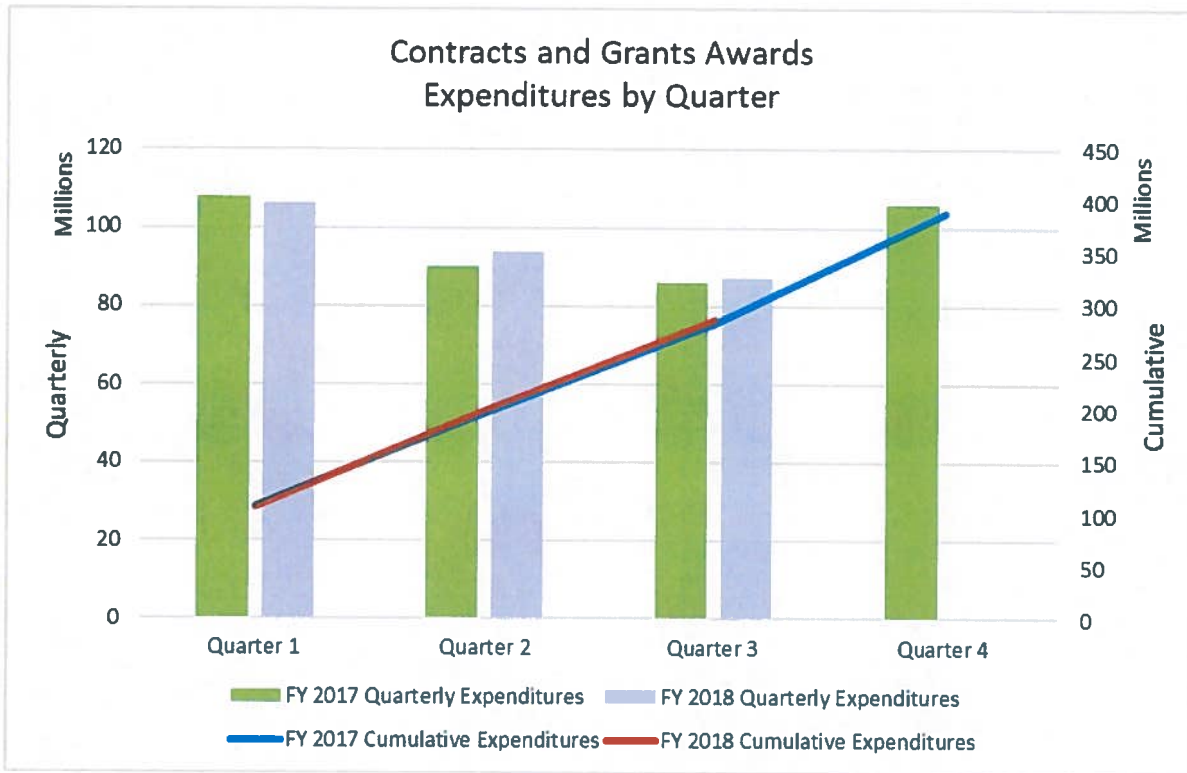
<http://www.ors.hawaii.edu/index.php/bor-reports>

The FY 2017 year-to-date total was: \$308,381,826
 The unofficial FY 2018 year-to-date total is: 1410 awards totaling \$297,551,479.

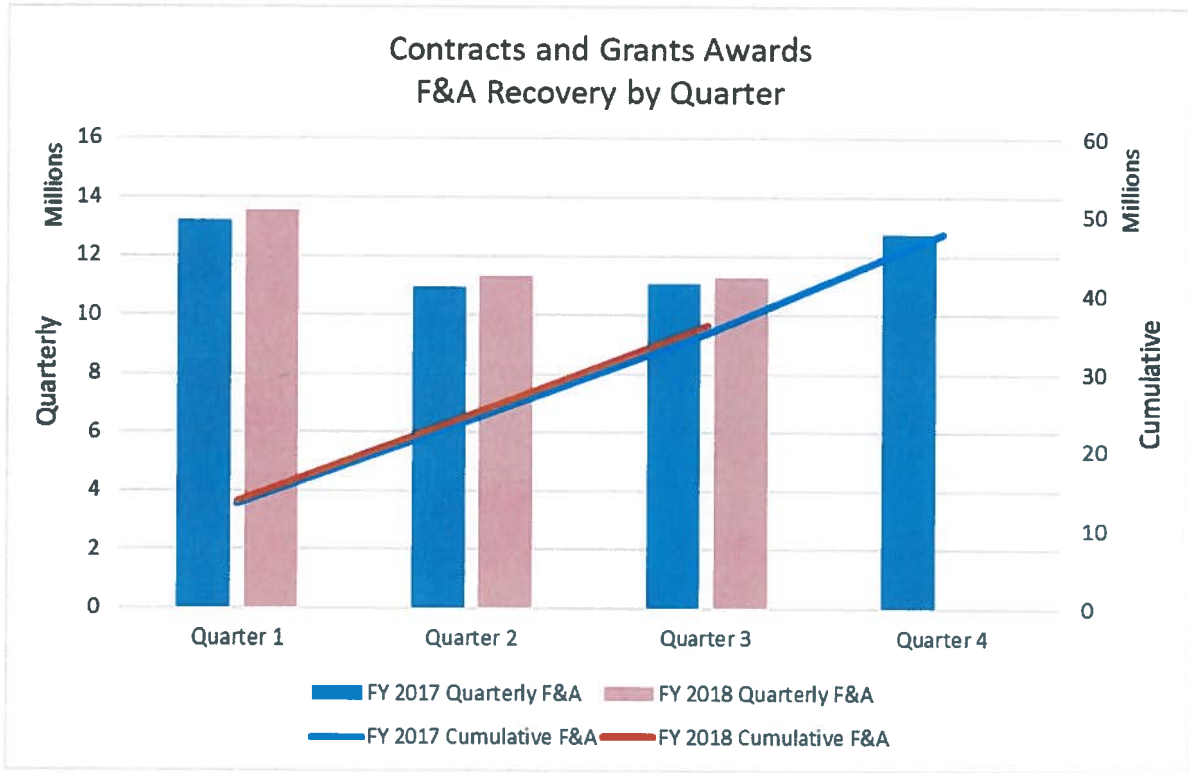
Contracts and Grants Awards
As of Quarter Three – FY 2018



Contracts and Grants Expenditures
As of Quarter Three – FY 2018



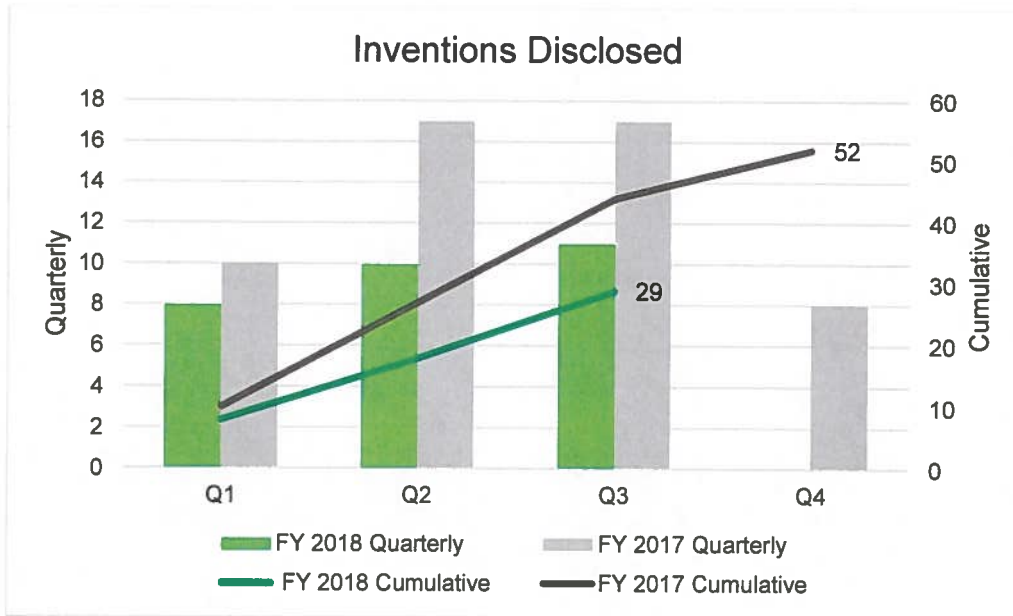
Contracts and Grants F&A Recovery
As of Quarter Three – FY 2018



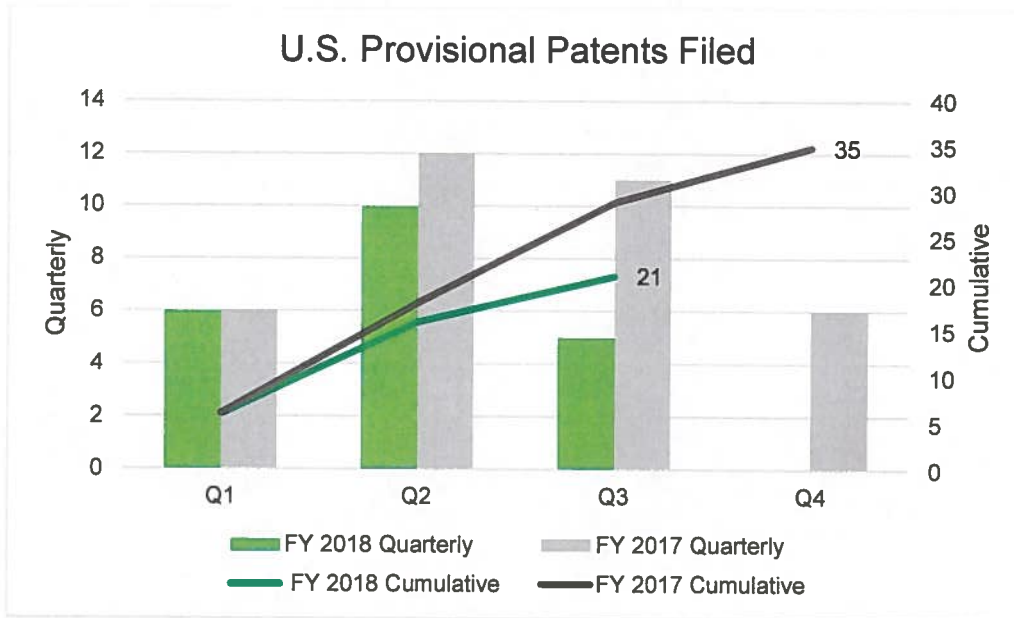
**OTT Research & Innovation Metrics
FY 2018 – Third Quarter Summary**

<u>Metric</u>	FY 2018	FY 2017
	<u>1/1/18 – 3/31/18</u>	<u>1/1/17 – 3/31/17</u>
Invention Disclosures	11	17
U.S. Provisional Patents Filed	5	11
U.S. Non-Provisional Patents Filed	4	2
U.S. Non-Provisional Patents Issued	1	2
License Agreements	5	5
Royalty Revenue	\$61,346.95	\$177,205.20

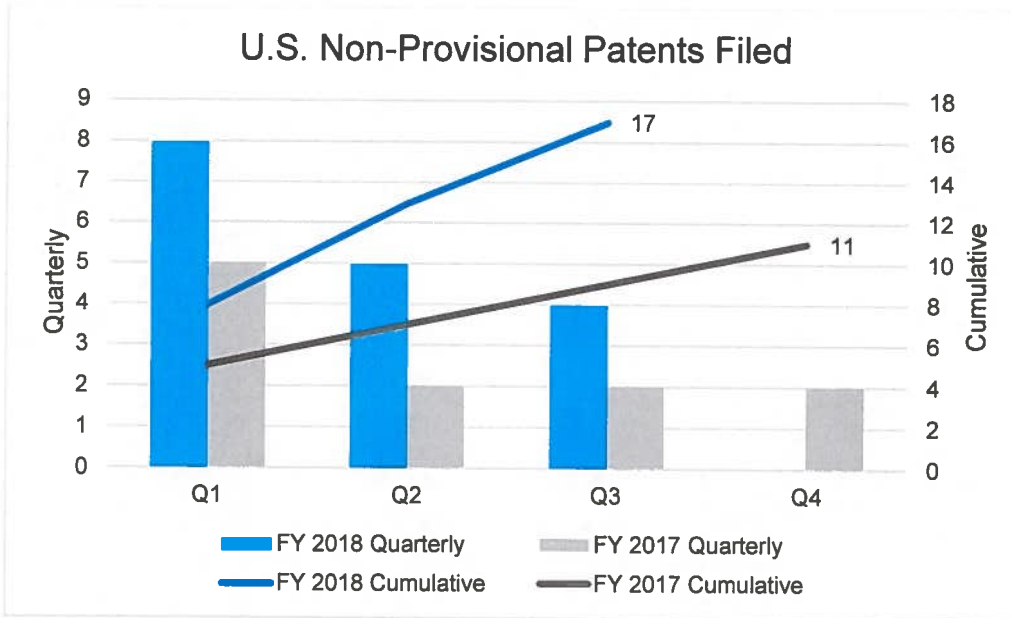
Invention Disclosures
As of Quarter Three – FY 2018



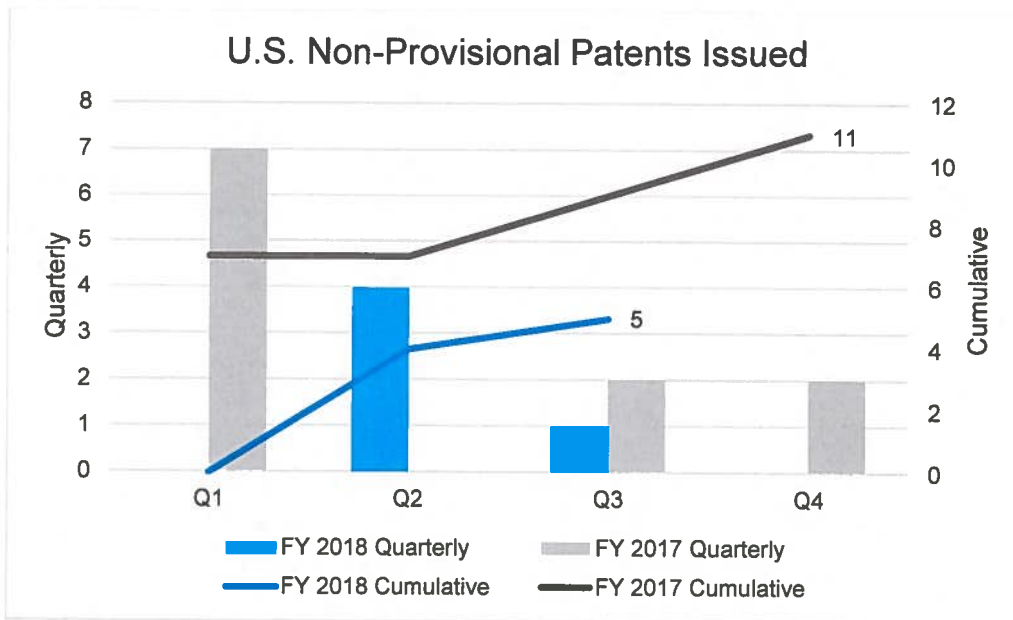
U.S. Provisional Patents Filed
As of Quarter Three – FY 2018



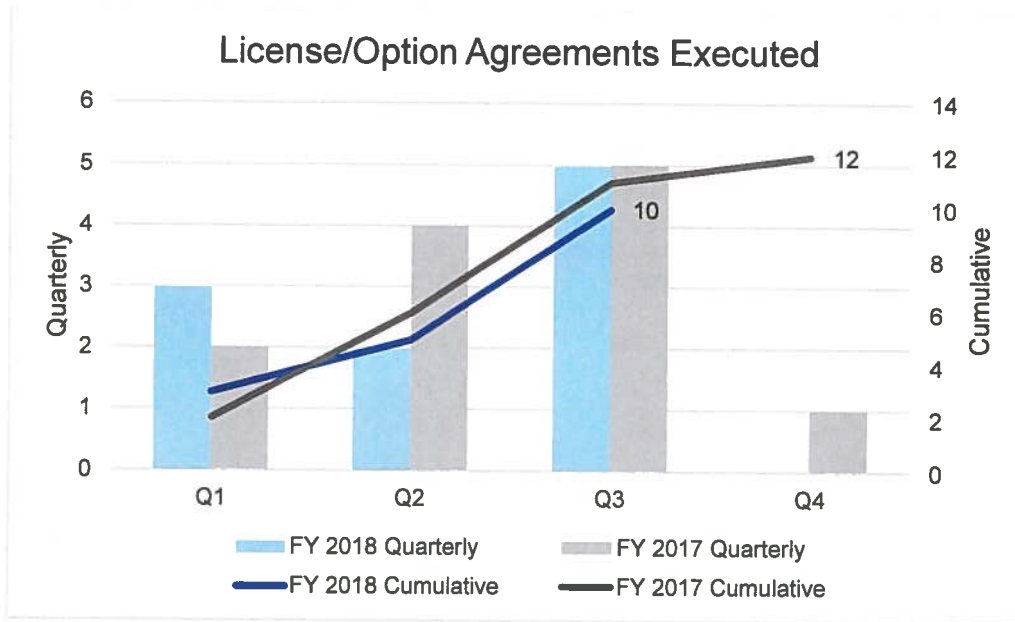
U.S. Non-Provisional Patents Filed
As of Quarter Three – FY 2018



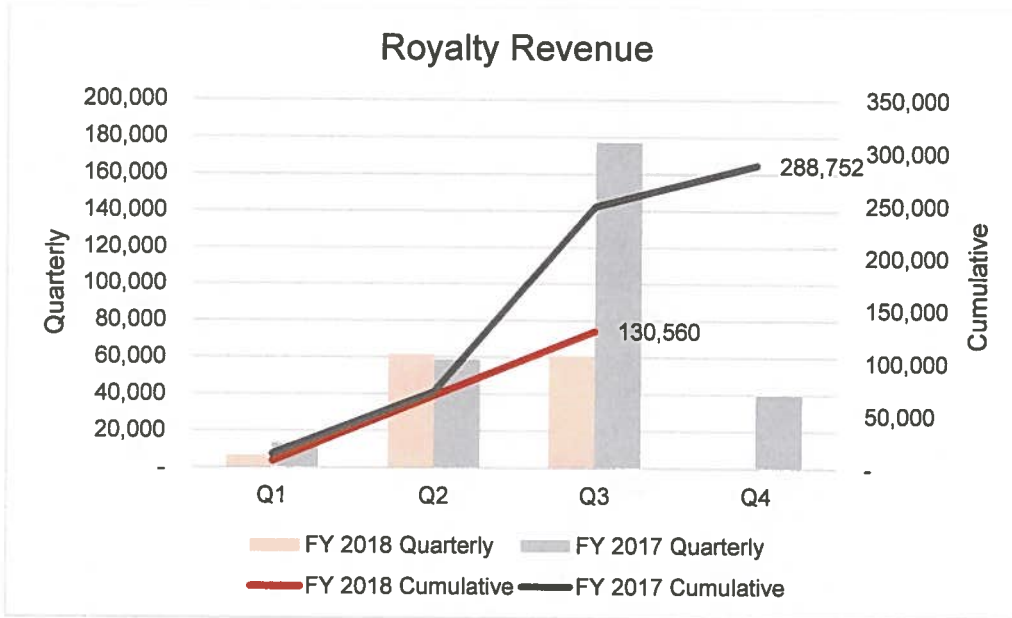
U.S. Non-Provisional Patents Issued
As of Quarter Three – FY 2018



License/Option Agreements
As of Quarter Three – FY 2018



**Royalty Revenue
As of Quarter Three – FY 2018**



FY 2018 Monthly Report of Awards to Date as of April 30, 2018						
Summary By Campus						
Campus	FY 2017		FY 2018		\$ Change	% Change
	Award Count	Award Amount	Award Count	Award Amount		
Hawai'i Community College	5	153,897	7	557,101	403,204	262.0%
Honolulu Community College	13	2,721,477	10	1,609,875	(1,111,602)	-40.8%
Kapi'olani Community College	15	6,520,425	12	4,278,454	(2,241,971)	-34.4%
Kaua'i Community College	8	2,008,834	3	877,867	(1,130,967)	-56.3%
Leeward Community College	10	4,144,760	5	3,251,986	(892,774)	-21.5%
University of Hawai'i Maui College	25	6,584,253	30	11,848,016	5,263,763	79.9%
Windward Community College	23	7,406,077	18	7,240,051	(166,026)	-2.2%
Subtotal Community Colleges and UH Maui College	99	29,539,723	85	29,663,350	123,627	0.4%
University of Hawai'i at Hilo	111	9,754,652	104	10,698,917	944,265	9.7%
University of Hawai'i at Manoa	1,267	247,230,698	1,286	244,268,401	(2,962,297)	-1.2%
University of Hawai'i at West O'ahu	12	5,531,172	18	5,819,403	288,231	5.2%
University of Hawai'i System	55	36,632,548	55	30,180,860	(6,451,688)	-17.6%
Grand Total	1,544	328,688,793	1,548	320,630,931	(8,057,862)	-2.5%
FY 2018 Monthly Report of Awards to Date as of April 30, 2018						
Campus Details						
Campus	FY 2017		FY 2018		\$ Change	% Change
	Award Count	Award Amount	Award Count	Award Amount		
Hawai'i Community College	5	153,897	7	557,101	403,204	262.0%
Chancellor, Hawaii Community College	5	153,897	7	557,101	403,204	262.0%
Academic Affairs (Hawaii CC)	1	13,200	2	384,919	371,719	2816.1%
Liberal Arts and Public Services	-	-	1	13,750	13,750	100.0%
Office of Continuing Education & Training	3	95,897	2	92,407	(3,490)	-3.6%
UH Center at West Hawai'i	1	44,800	2	66,025	21,225	47.4%
Honolulu Community College	13	2,721,477	10	1,609,875	(1,111,602)	-40.8%
Chancellor, Honolulu Community College	13	2,721,477	10	1,609,875	(1,111,602)	-40.8%
Academic Affairs (Honolulu CC)	2	557,553	1	576,039	18,486	3.3%
Chancellor, Honolulu Community College	2	267,198	6	640,783	373,585	139.8%
Early Childhood (Honolulu CC)	1	40,000	1	40,000	-	0.0%
Natural Sciences	2	1,318,891	-	-	(1,318,891)	-100.0%
Pacific Center for Advanced Technology Training	4	219,782	-	-	(219,782)	-100.0%
University College	2	318,053	2	353,053	35,000	11.0%
Kapi'olani Community College	15	6,520,425	12	4,278,454	(2,241,971)	-34.4%
Chancellor, Kapiolani Community College	15	6,520,425	12	4,278,454	(2,241,971)	-34.4%
Academic Affairs (KCC)	1	494,973	-	-	(494,973)	-100.0%
Arts and Sciences Academic Program	1	999,997	1	49,001	(950,996)	-95.1%
Chancellor, Kapiolani Community College	5	4,422,662	3	2,841,211	(1,581,451)	-35.8%
Continuing Education / Non-Credit Program	2	94,749	-	-	(94,749)	-100.0%
Culinary Arts (KCC)	1	14,994	2	132,756	117,762	785.4%
Emergency Medical Services	1	149,480	2	399,480	250,000	167.2%
Emergency Medical Technician	-	-	1	240,000	240,000	100.0%
Math and Science	1	60,350	-	-	(60,350)	-100.0%
Office for Institutional Effectiveness	1	8,500	1	2,000	(6,500)	-76.5%
Office of International Affairs	1	1,037	-	-	(1,037)	-100.0%
Student Support Services	1	273,683	2	614,006	340,323	124.3%
Kaua'i Community College	8	2,008,834	3	877,867	(1,130,967)	-56.3%
Chancellor, Kaul Community College	8	2,008,834	3	877,867	(1,130,967)	-56.3%
Chancellor, Kauai Community College	6	1,976,851	3	877,867	(1,098,984)	-55.6%
Continuing Education and Training (Kauai CC)	2	31,983	-	-	(31,983)	-100.0%
Leeward Community College	10	4,144,760	5	3,251,986	(892,774)	-21.5%
Chancellor, Leeward Community College	10	4,144,760	5	3,251,986	(892,774)	-21.5%
Chancellor, Leeward Community College	9	3,894,760	5	3,251,986	(642,774)	-16.5%
Continuing Education and Workforce Dev	1	250,000	-	-	(250,000)	-100.0%
University of Hawai'i at Hilo	111	9,754,652	104	10,698,917	944,265	9.7%
Chancellor, UH Hilo	8	1,474,645	4	1,683,215	208,570	14.1%
Chancellor, UH Hilo	8	1,474,645	4	1,683,215	208,570	14.1%
College of Agriculture, Forestry and Natural Resource Mgt	17	1,466,894	14	1,011,258	(455,636)	-31.1%
College of Agriculture, Forestry and Natural Resource Mgt	11	1,033,758	7	491,230	(542,528)	-52.5%
Pacific Aquaculture and Coastal Resources Ctr	6	433,136	7	520,028	86,892	20.1%
College of Arts and Sciences	32	2,886,393	22	1,996,487	(889,906)	-30.8%
Anthropology (UH Hilo)	3	407,080	-	-	(407,080)	-100.0%
Art (UH Hilo)	-	-	1	10,000	10,000	100.0%
Biology (UH Hilo)	4	186,804	5	393,123	206,319	110.4%
College of Arts and Sciences	1	275,000	1	300,000	25,000	9.1%
Geography (UH Hilo)	2	18,385	2	208,795	190,410	1035.7%
Geology-Geophysics	1	1,100	1	6,768	5,668	515.3%
Humanities Division	2	21,920	-	-	(21,920)	-100.0%
Marine Science	-	-	1	24,373	24,373	100.0%
Mathematics (UH Hilo)	-	-	1	7,000	7,000	100.0%
Natural Sciences Division	15	1,773,530	7	750,916	(1,022,614)	-57.7%
Physics and Astronomy	2	145,513	2	195,512	49,999	34.4%
School of Nursing	1	7,061	-	-	(7,061)	-100.0%
Social Sciences Division	1	50,000	1	100,000	50,000	100.0%
College of Continuing Education and Community Svc	2	68,000	2	67,750	(250)	-0.4%
College of Continuing Education and Community Svc	2	68,000	2	67,750	(250)	-0.4%
College of Pharmacy	9	567,851	6	153,843	(414,008)	-72.9%

College of Pharmacy	3	39,770	2	36,260	(3,510)	-8.8%
Pharmaceutical Sciences	4	503,556	2	47,400	(456,156)	-90.6%
Pharmacy Practice	2	24,255	2	70,183	45,658	186.2%
Hawaii Small Business Development Center	3	159,150	5	701,563	542,413	340.8%
Hawaii Small Business Development Center	3	159,150	5	701,563	542,413	340.8%
Imiloa Astronomy Center Of Hawaii	7	450,468	9	832,854	382,386	84.9%
Imiloa Astronomy Center Of Hawaii	7	450,468	9	832,854	382,386	84.9%
Ka Haka'Ula O Ke'Elilikalani-UHH	7	860,980	5	1,741,041	880,061	102.2%
Hale Kuamo'o Center	1	100,000	1	634,437	534,437	534.4%
Ka Haka'Ula O Ke'Elilikalani-UHH	6	760,980	4	1,106,604	345,624	45.4%
Vice Chancellor for Academic Affairs (UH Hilo)	-	-	1	57,000	57,000	100.0%
Vice Chancellor for Academic Affairs (UH Hilo)	-	-	1	57,000	57,000	100.0%
Vice Chancellor for Administrative Affairs	-	-	1	2,250	2,250	100.0%
Vice Chancellor for Administrative Affairs	-	-	1	2,250	2,250	100.0%
Vice Chancellor for Research	17	735,788	25	1,359,916	624,128	84.8%
Vice Chancellor for Research	17	735,788	25	1,359,916	624,128	84.8%
Vice Chancellor for Student Affairs	9	1,084,483	10	1,091,740	7,257	0.7%
Center For Gifted And Talented Native Hawaiian Children	2	7,250	1	44,800	37,550	517.9%
Upward Bound	3	772,500	-	-	(772,500)	-100.0%
Vice Chancellor for Student Affairs	4	304,733	9	1,046,940	742,207	243.6%
University of Hawai'i at Manoa	1,267	247,230,698	1,286	244,268,401	(2,962,297)	-1.2%
Chancellor, UH Manoa	-	-	1	30,000	30,000	100.0%
Chancellor, UH Manoa	-	-	1	30,000	30,000	100.0%
College of Arts and Humanities	16	532,377	15	391,625	(140,752)	-26.4%
American Studies	-	-	2	104,618	104,618	100.0%
Art and Art History	1	5,290	1	2,766	(2,524)	-47.7%
College of Arts and Humanities	1	9,000	-	-	(9,000)	-100.0%
History (UH Manoa)	1	60,000	2	73,349	13,349	22.2%
Music (UH Manoa)	4	66,576	3	19,930	(46,646)	-70.1%
Philosophy (UH Manoa)	5	286,765	2	160,000	(126,765)	-44.2%
Religion (UH Manoa)	1	74,501	-	-	(74,501)	-100.0%
Theatre and Dance	2	8,245	2	13,962	5,717	69.3%
UHM Uehiro Academy for Philosophy and Ethics in Education	1	22,000	3	17,000	(5,000)	-22.7%
College of Education	43	9,500,776	54	11,097,708	1,596,932	16.8%
Center on Disability Studies/University Affiliated Pgms	21	6,056,774	25	5,770,092	(286,682)	-4.7%
College of Education	5	543,417	5	940,975	397,558	73.2%
Curriculum Research and Development Group	10	2,200,503	9	1,476,302	(724,201)	-32.9%
Department of Curriculum Studies	1	62,754	2	349,103	286,349	456.3%
Department of Educational Psychology	2	83,722	-	-	(83,722)	-100.0%
Department of Kinesiology and Rehabilitation Science	2	305,510	8	730,981	425,471	139.3%
Department of Special Education	1	233,096	2	498,074	264,978	113.7%
Institute for Teacher Education	1	15,000	3	1,332,181	1,317,181	8781.2%
College of Engineering	30	4,257,886	32	3,497,386	(760,500)	-17.9%
Civil and Environmental Engineering	6	599,143	11	1,469,040	869,897	145.2%
College of Engineering	4	518,245	5	780,160	261,915	50.5%
Electrical Engineering	14	2,559,046	9	583,199	(1,975,847)	-77.2%
Hawaii Center for Advanced Communications	-	-	-	-	-	100.0%
Mechanical Engineering	6	581,452	7	664,987	83,535	14.4%
College of Language, Linguistics and Literature	24	2,073,526	23	2,148,836	75,310	3.6%
Center for Language and Technology	2	4,170	2	16,339	12,169	291.8%
College of Language, Linguistics and Literature	3	702,548	2	867,303	164,755	23.5%
Department of East Asian Languages and Literature	5	1,067,302	4	922,073	(145,229)	-13.6%
Department of English	4	35,500	4	8,581	(26,919)	-75.8%
Department of Linguistics	9	261,506	8	311,491	49,985	19.1%
Department of Second Language Studies	-	-	1	16,902	16,902	100.0%
Dept of Languages and Literatures of Europe and the Americas	1	2,500	2	6,147	3,647	145.9%
College of Natural Sciences	231	28,787,029	206	27,098,444	(1,688,585)	-5.9%
Department of Biology (Biology Program)	11	507,068	8	1,011,285	504,217	99.4%
Department of Botany	175	22,147,228	154	22,225,719	78,491	0.4%
Department of Chemistry	9	853,897	9	695,549	(158,348)	-18.5%
Department of Mathematics	3	565,355	4	382,371	(182,984)	-32.4%
Department of Microbiology	2	353,750	1	540	(353,210)	-99.8%
Department of Physics and Astronomy	21	3,336,682	23	2,233,657	(1,103,025)	-33.1%
Information and Computer Sciences	10	1,023,049	7	549,323	(473,726)	-46.3%
College of Social Sciences	59	10,071,606	64	12,901,691	2,830,085	28.1%
College of Social Sciences	2	81,320	3	144,875	63,555	78.2%
Department of Anthropology	3	171,262	2	545,767	374,505	218.7%
Economics (UH Manoa)	5	147,333	7	437,115	289,782	196.7%
Ethnic Studies	2	12,543	-	-	(12,543)	-100.0%
Geography (UH Manoa)	4	312,222	6	392,668	80,446	25.8%
Political Science (UH Manoa)	2	78,969	1	20,742	(58,227)	-73.7%
Psychology (UH Manoa)	5	867,582	3	1,082,845	215,263	24.8%
School of Communications	3	106,300	2	36,746	(69,554)	-65.4%
Social Science Research Institute	28	3,040,220	33	4,803,333	1,763,113	58.0%
Social Sciences Public Policy Center	1	2,500	-	-	(2,500)	-100.0%
Sociology (UH Manoa)	1	15,355	1	20,000	4,645	30.3%
Urban and Regional Planning	3	5,236,000	6	5,417,600	181,600	3.5%
College of Tropical Agriculture and Human Resources	119	11,482,405	130	15,499,445	4,017,040	35.0%
Center on the Family	5	526,880	7	918,160	391,280	74.3%
College of Tropical Agriculture and Human Resources	6	690,196	6	703,867	13,671	2.0%
Cooperative Extension	1	229,092	3	716,464	487,372	212.7%

Family and Consumer Sciences	4	252,622	3	141,147	(111,475)	-44.1%
Hawaii County	8	196,427	12	667,416	470,989	239.8%
Human Nutrition, Food and Animal Sciences	7	445,470	11	2,715,100	2,269,630	509.5%
Kauai County	1	13,800	1	13,800	-	0.0%
Maul County	6	280,389	4	319,714	39,325	14.0%
Molecular Biosciences and Bioengineering	3	527,658	3	271,254	(256,404)	-48.6%
Natural Resources and Environmental Mgt	25	1,750,487	18	1,540,334	(210,153)	-12.0%
Oahu County	4	740,361	4	670,083	(70,278)	-9.5%
Office of The Assoc Dean for Academic and Student Affairs	1	1,528,439	5	2,332,953	804,514	52.6%
Plant and Environmental Protection Sciences	35	3,593,554	39	3,874,420	280,866	7.8%
Tropical Plant and Soil Science	13	707,030	14	614,733	(92,297)	-13.1%
Colleges of Arts and Sciences	-	-	1	18,000	18,000	100.0%
Colleges of Arts and Sciences	-	-	1	18,000	18,000	100.0%
Hawai'i Inulakea School of Hawaiian Knowledge	6	1,996,314	4	2,534,574	538,260	27.0%
Hawai'i Inulakea School of Hawaiian Knowledge	5	1,925,179	4	2,534,574	609,395	31.7%
Kamakoukalani Center for Hawaiian Studies	1	71,135	-	-	(71,135)	-100.0%
Institute for Astronomy	51	16,156,521	52	11,998,453	(4,158,068)	-25.7%
Institute for Astronomy	51	16,156,521	52	11,998,453	(4,158,068)	-25.7%
John A. Burns School of Medicine	176	48,832,851	173	43,281,997	(5,550,854)	-11.4%
Department of Anatomy, Biochemistry, and Physiology	3	376,898	9	920,183	543,285	144.1%
Department of Cell and Molecular Biology	8	4,321,386	9	3,469,521	(851,865)	-19.7%
Department of Complementary and Alternative Medicine	10	2,738,814	11	2,691,362	(47,452)	-1.7%
Department of Family Medicine and Community Health	9	1,230,602	9	2,223,372	992,770	80.7%
Department of Geriatric Medicine	5	1,936,319	4	916,763	(1,019,556)	-52.7%
Department of Medicine	31	7,535,893	22	2,372,435	(5,163,458)	-68.5%
Department of Native Hawaiian Health	20	3,323,274	14	2,526,679	(796,595)	-24.0%
Department of Obstetrics, Gynecology and Women's Health	18	5,347,028	11	5,260,752	(86,276)	-1.6%
Department of Pediatrics	15	5,007,926	15	3,096,019	(1,911,907)	-38.2%
Department of Psychiatry	7	4,735,528	7	5,495,095	759,567	16.0%
Department of Surgery	10	2,016,386	14	1,973,907	(42,479)	-2.1%
Department of Tropical Medicine, Medical Micro and Pharm	25	4,745,839	32	4,202,597	(543,242)	-11.4%
Institute for Biogenesis Research	3	2,391,460	1	195,492	(2,195,968)	-91.8%
John A. Burns School of Medicine	11	2,442,993	14	7,258,820	4,815,827	197.1%
Native Hawaiian Center of Excellence	1	682,505	1	679,000	(3,505)	-0.5%
Lyon Arboretum	7	492,995	6	266,256	(226,739)	-46.0%
Lyon Arboretum	7	492,995	6	266,256	(226,739)	-46.0%
Office of Research Compliance	-	-	1	49,900	49,900	100.0%
Animal and Veterinary Services Program	-	-	1	49,900	49,900	100.0%
Outreach College	6	140,214	7	129,263	(10,951)	-7.8%
Community Programs	3	62,900	5	67,126	4,226	6.7%
Non-Credit Programs (UH Manoa)	1	3,714	-	-	(3,714)	-100.0%
Outreach College	2	73,600	2	62,137	(11,463)	-15.6%
School of Architecture	2	163,646	1	150,175	(13,471)	-8.2%
School of Architecture	2	163,646	1	150,175	(13,471)	-8.2%
School of Nursing and Dental Hygiene	7	1,184,527	11	2,107,577	923,050	77.9%
Department of Nursing	6	1,150,527	8	1,998,638	848,111	73.7%
School of Nursing and Dental Hygiene	1	34,000	3	108,939	74,939	220.4%
School of Ocean and Earth Science and Technology	317	68,500,701	318	76,884,501	8,383,800	12.2%
Center for Microbial Oceanography, Research and Edu (C-MORE)	4	1,911,601	9	3,938,028	2,026,427	106.0%
Department of Atmospheric Sciences	8	3,599,708	3	264,402	(3,335,306)	-92.7%
Department of Geology and Geophysics	23	2,078,201	15	1,120,687	(957,514)	-46.1%
Department of Ocean and Resources Engineering	6	875,254	8	1,202,074	326,820	37.3%
Department of Oceanography	35	9,728,352	46	10,285,374	557,022	5.7%
Hawaii Institute of Geophysics and Planetology (HIGP)	63	7,081,973	67	8,436,208	1,354,235	19.1%
Hawaii Institute of Marine Biology (HIMB)	27	3,475,830	28	2,856,498	(619,332)	-17.8%
Hawaii Natural Energy Institute (HNEI)	9	9,867,901	11	9,218,851	(649,050)	-6.6%
International Pacific Research Center (IPRC)	18	2,705,573	15	2,360,553	(345,020)	-12.8%
Joint Institute for Marine and Atmospheric Research (JIMAR)	60	15,431,191	59	21,289,174	5,857,983	38.0%
Pacific Biosciences Research Center	31	3,072,101	23	3,857,716	785,615	25.6%
School of Ocean and Earth Science and Technology	9	4,974,300	14	7,505,655	2,531,355	50.9%
Sea Grant College Program	24	3,698,716	19	3,800,521	101,805	2.8%
University Marine Center/Ship Operations	-	-	1	748,760	748,760	100.0%
School of Pacific and Asian Studies	10	991,710	13	1,912,598	920,888	92.9%
Center for Chinese Studies	4	115,600	1	122,560	6,960	6.0%
Center for Japanese Studies	1	219,850	2	571,350	351,500	159.9%
Center for Korean Studies	2	182,860	5	233,273	50,413	27.6%
Center for Pacific Islands Studies	1	228,000	2	405,000	177,000	77.6%
Center for Southeast Asian Studies	1	239,400	2	579,900	340,500	142.2%
School of Pacific and Asian Studies	1	6,000	1	515	(5,485)	-91.4%
School of Social Work	38	4,537,734	38	5,621,136	1,083,402	23.9%
Center on Aging	3	153,480	3	165,071	11,591	7.6%
Office of Public Health Studies	24	3,182,045	24	4,309,889	1,127,844	35.4%
School of Social Work	11	1,202,209	11	1,146,176	(56,033)	-4.7%
Shidler College of Business	2	269,596	-	-	(269,596)	-100.0%
Department of Management and Industrial Relations	1	210,000	-	-	(210,000)	-100.0%
Shidler College of Business	1	59,596	-	-	(59,596)	-100.0%
University of Hawaii Cancer Center	73	28,736,816	65	16,242,735	(12,494,081)	-43.5%
Cancer Etiology	26	11,539,520	28	7,371,934	(4,167,586)	-36.1%
Clinical Sciences	14	9,631,601	18	2,689,309	(6,942,292)	-72.1%
Natural Products	17	3,374,522	8	995,378	(2,379,144)	-70.5%
Social and Behavioral Sciences	3	602,148	2	582,304	(19,844)	-3.3%

University of Hawaii Cancer Center	13	3,589,025	9	4,603,810	1,014,785	28.3%
Vice Chancellor, Academic Affairs	6	1,399,224	9	1,327,822	(71,402)	-5.1%
Graduate Education	2	862,500	1	695,000	(167,500)	-19.4%
Library (UH Manoa)	2	52,719	5	106,081	53,362	101.2%
Service Learning	-	-	1	22,886	22,886	100.0%
UH Press	1	90,000	1	100,000	10,000	11.1%
Undergraduate Education	1	394,005	1	403,855	9,850	2.5%
Vice Chancellor, Admin, Finance and Operations	1	4,807	-	-	(4,807)	-100.0%
Buildings & Grounds Management	1	4,807	-	-	(4,807)	-100.0%
Vice Chancellor, Research	-	-	2	24,953	24,953	100.0%
Vice Chancellor, Research	-	-	2	24,953	24,953	100.0%
Vice Chancellor, Students	11	4,407,318	13	2,896,843	(1,510,475)	-34.3%
Health & Wellness	-	-	1	25,000	25,000	100.0%
Student Equity Excel & Diversity	10	4,332,318	10	2,752,843	(1,579,475)	-36.5%
Women's Center	1	75,000	2	119,000	44,000	58.7%
Water Resources Research Center	9	1,311,108	11	3,804,888	2,493,780	190.2%
Water Resources Research Center	9	1,311,108	11	3,804,888	2,493,780	190.2%
William S. Richardson School of Law	23	1,399,011	36	2,351,595	952,584	68.1%
William S. Richardson School of Law	23	1,399,011	36	2,351,595	952,584	68.1%
University of Hawai'i at West O'ahu	12	5,531,172	18	5,819,403	288,231	5.2%
Chancellor, UH West Oahu	12	5,531,172	18	5,819,403	288,231	5.2%
Anthropology (UH WO)	-	-	2	1,200	1,200	100.0%
Chancellor, UH West Oahu	4	2,219,104	3	2,059,769	(159,335)	-7.2%
Division of Social Sciences	2	231,326	5	718,166	486,840	210.5%
General Business Administration	1	424,088	-	-	(424,088)	-100.0%
General Public Administration	2	378,000	-	-	(378,000)	-100.0%
Vice Chancellor for Academic Affairs (UH WO)	-	-	1	45,000	45,000	100.0%
Vice Chancellor for Student Affairs	3	2,278,654	7	2,995,268	716,614	31.4%
University of Hawai'i Maui College	25	6,584,253	30	11,848,016	5,263,763	79.9%
Chancellor, UH Maui College	25	6,584,253	30	11,848,016	5,263,763	79.9%
Academic Affairs (UH Maui College)	1	1,246	1	2,000,000	1,998,754	160413.6%
Allied Health Department	2	33,726	1	1,100	(32,626)	-96.7%
Chancellor, UH Maui College	8	1,723,703	19	6,286,721	4,563,018	264.7%
Continuing Education and Training (UH Maui College)	-	-	3	57,400	57,400	100.0%
Cooperative Education (UH Maui College)	2	114,523	2	58,680	(55,843)	-48.8%
Culinary Arts (UH Maui College)	1	45,000	-	-	(45,000)	-100.0%
General Education	1	800,000	1	800,000	-	0.0%
Human Services (UH Maui College)	1	1,860,888	1	1,883,888	23,000	1.2%
Music (UH Maui College)	1	500,000	1	500,000	-	0.0%
Non-Credit Programs (UH Maui College)	3	130,000	-	-	(130,000)	-100.0%
Student Affairs (UH Maui College)	4	1,341,034	1	260,227	(1,080,807)	-80.6%
University of Hawaii Center, Maui	1	34,133	-	-	(34,133)	-100.0%
University of Hawai'i System	55	36,632,548	55	30,180,860	(6,451,688)	-17.6%
Office of the Vice President for Community Colleges	4	1,030,109	5	1,412,851	382,742	37.2%
Office of the Vice President for Community Colleges	4	1,030,109	5	1,412,851	382,742	37.2%
Office of the Vice President for Research and Innovation	13	8,622,196	17	7,066,252	(1,555,944)	-18.0%
Applied Research Laboratory	10	8,411,057	16	7,059,249	(1,351,808)	-16.1%
Office of the Vice President for Research and Innovation	3	211,139	1	7,003	(204,136)	-96.7%
Office of the VP for Academic Planning and Policy	18	9,637,963	15	4,367,285	(5,270,678)	-54.7%
Hawai'i P-20 Partnerships for Education Office	11	1,943,985	12	4,148,259	2,204,274	113.4%
Office of the VP for Academic Planning and Policy	7	7,693,978	3	219,026	(7,474,952)	-97.2%
Office of the VP for Information Tech/Chief Info Officer	18	17,305,980	18	17,334,472	28,492	0.2%
Maui High Performance Computing Center (MHPCC)	6	5,454,728	-	-	(5,454,728)	-100.0%
Office of the VP for Information Tech/Chief Info Officer	4	272,174	8	6,568,070	6,295,896	2313.2%
Pacific Disaster Center	8	11,579,078	10	10,766,402	(812,676)	-7.0%
VP For Administration	2	36,300	-	-	(36,300)	-100.0%
VP For Administration	2	36,300	-	-	(36,300)	-100.0%
Windward Community College	23	7,406,077	18	7,240,051	(166,026)	-2.2%
Chancellor, Windward Community College	23	7,406,077	18	7,240,051	(166,026)	-2.2%
Academic Affairs (Windward CC)	1	49,975	-	-	(49,975)	-100.0%
Chancellor, Windward Community College	21	7,323,102	18	7,240,051	(83,051)	-1.1%
Vocational and Community Education	1	33,000	-	-	(33,000)	-100.0%
Grand Total	1,544	328,688,793	1,548	320,630,931	(8,057,862)	-2.5%

Hawai'i Innovation Initiative Metrics

BOR Committee on Research and Innovation Meeting
May 24, 2018

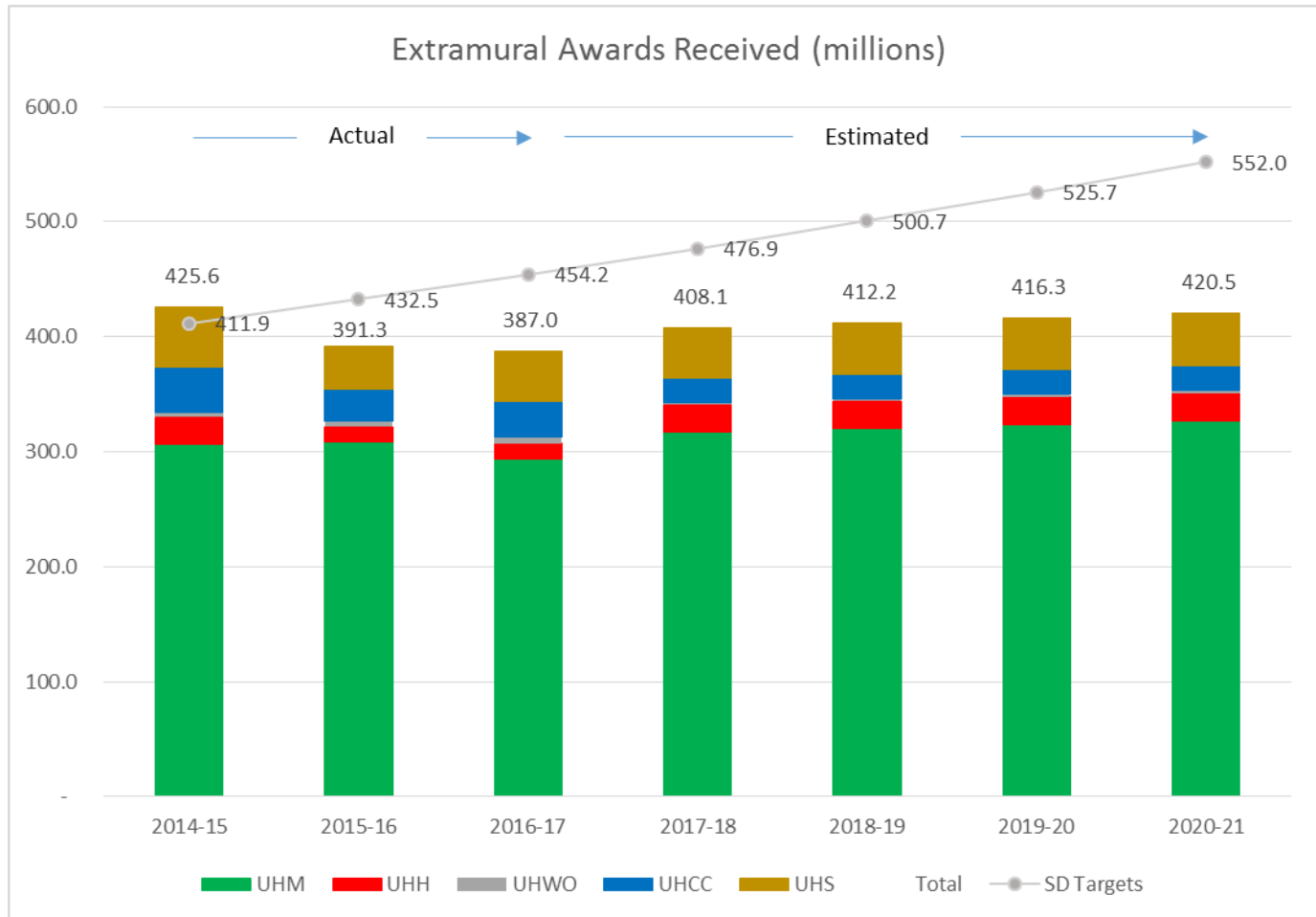


Current Metrics

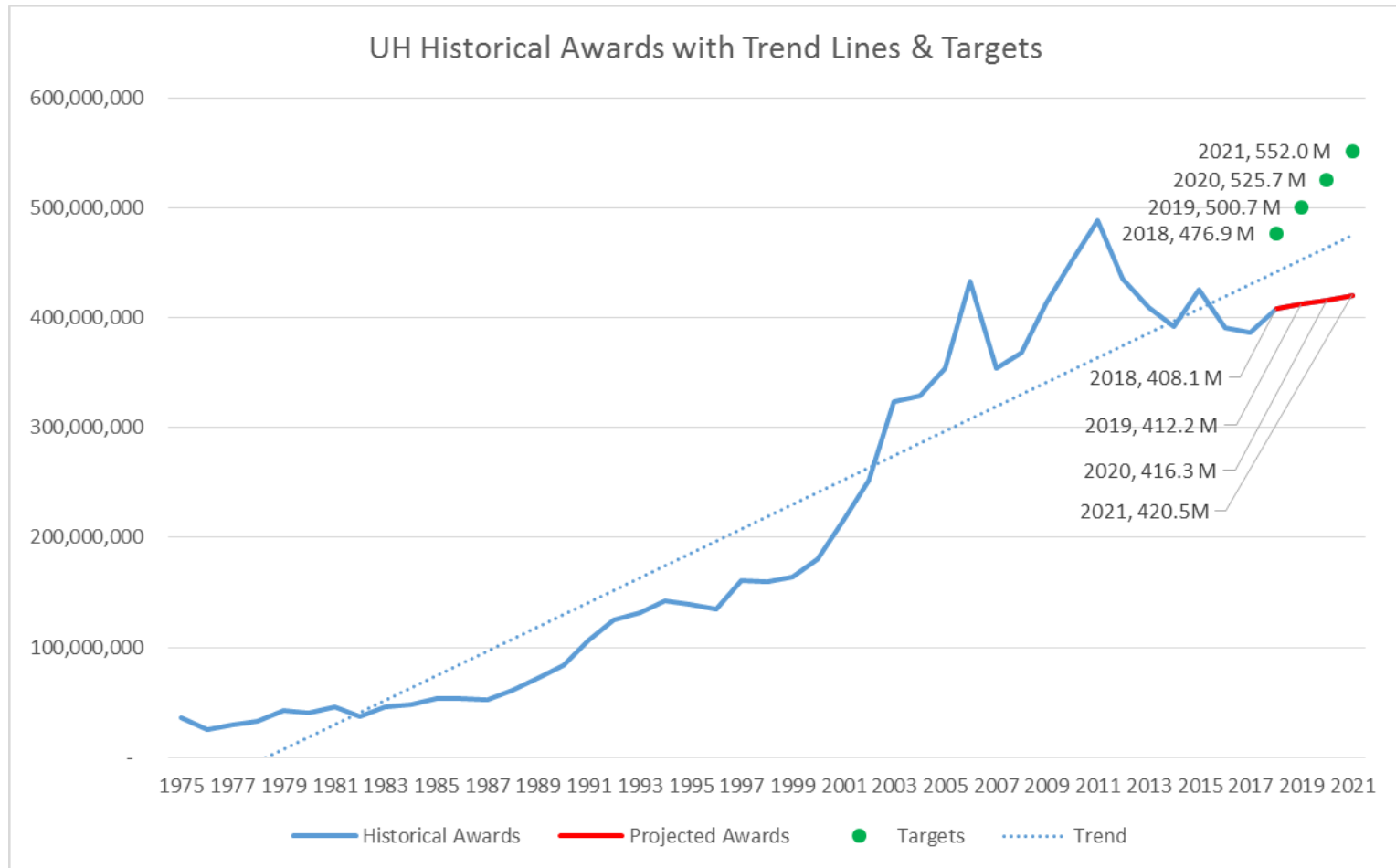
Category	Strategic Directions	Additional (e.g. Quarterly Report; Dashboard)
Awards	<ul style="list-style-type: none"> Value of extramural awards received 	<ul style="list-style-type: none"> N/A
Research Expenditures	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Extramural expenditures F&A recovery
IP Development, Patents and Licenses	<ul style="list-style-type: none"> Number of disclosures Number of new patents Number of new licenses and options New start-ups (<i>licensed UH technology only</i>) 	<ul style="list-style-type: none"> Number of patent applications Total royalty revenue XLR8UH cohorts
Other	<ul style="list-style-type: none"> STEM degrees awarded 	<ul style="list-style-type: none"> UHM R&D expenditures vs. peers UHM selected research rankings (e.g., NSF HERD; National Taiwan University)



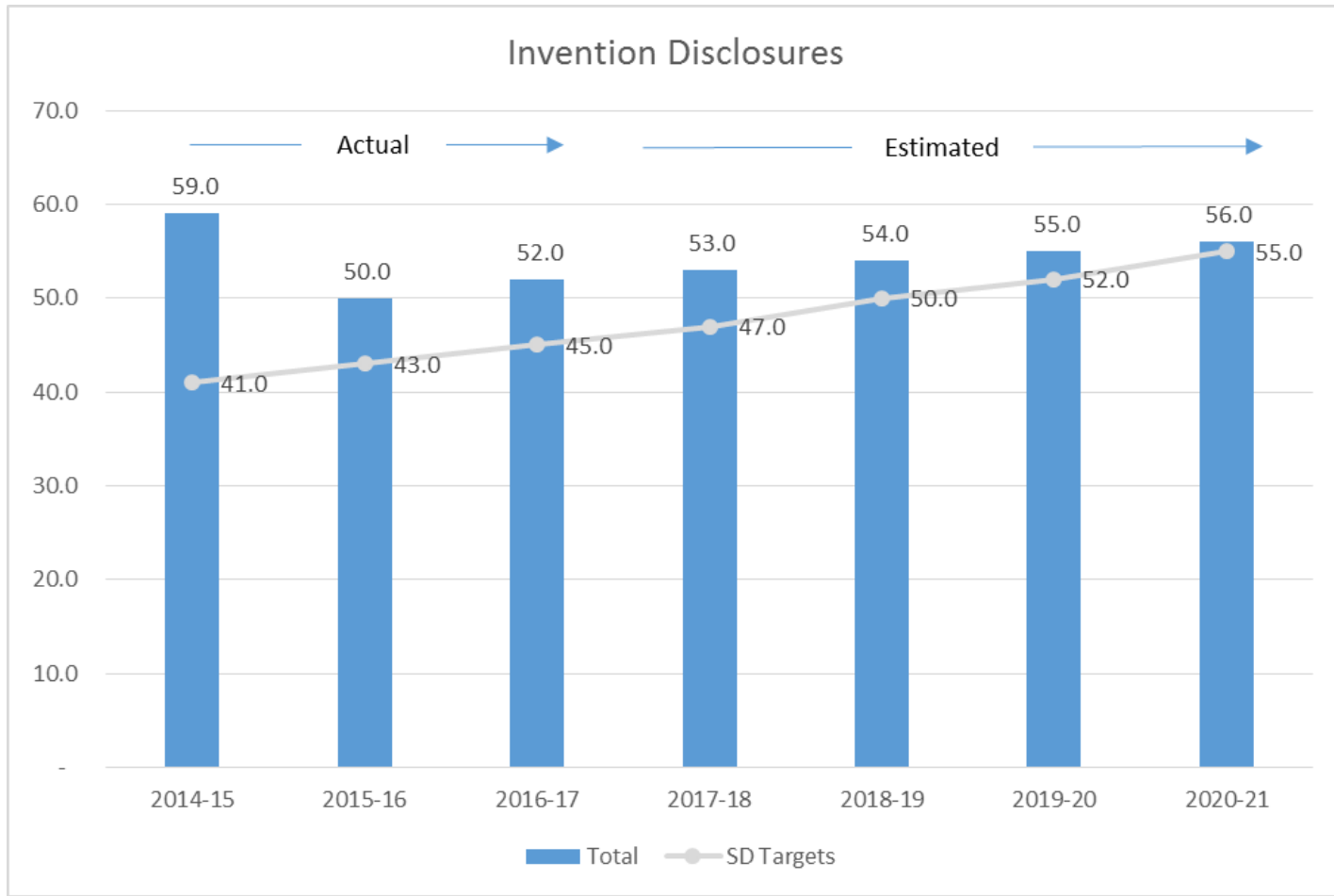
Extramural Awards Received



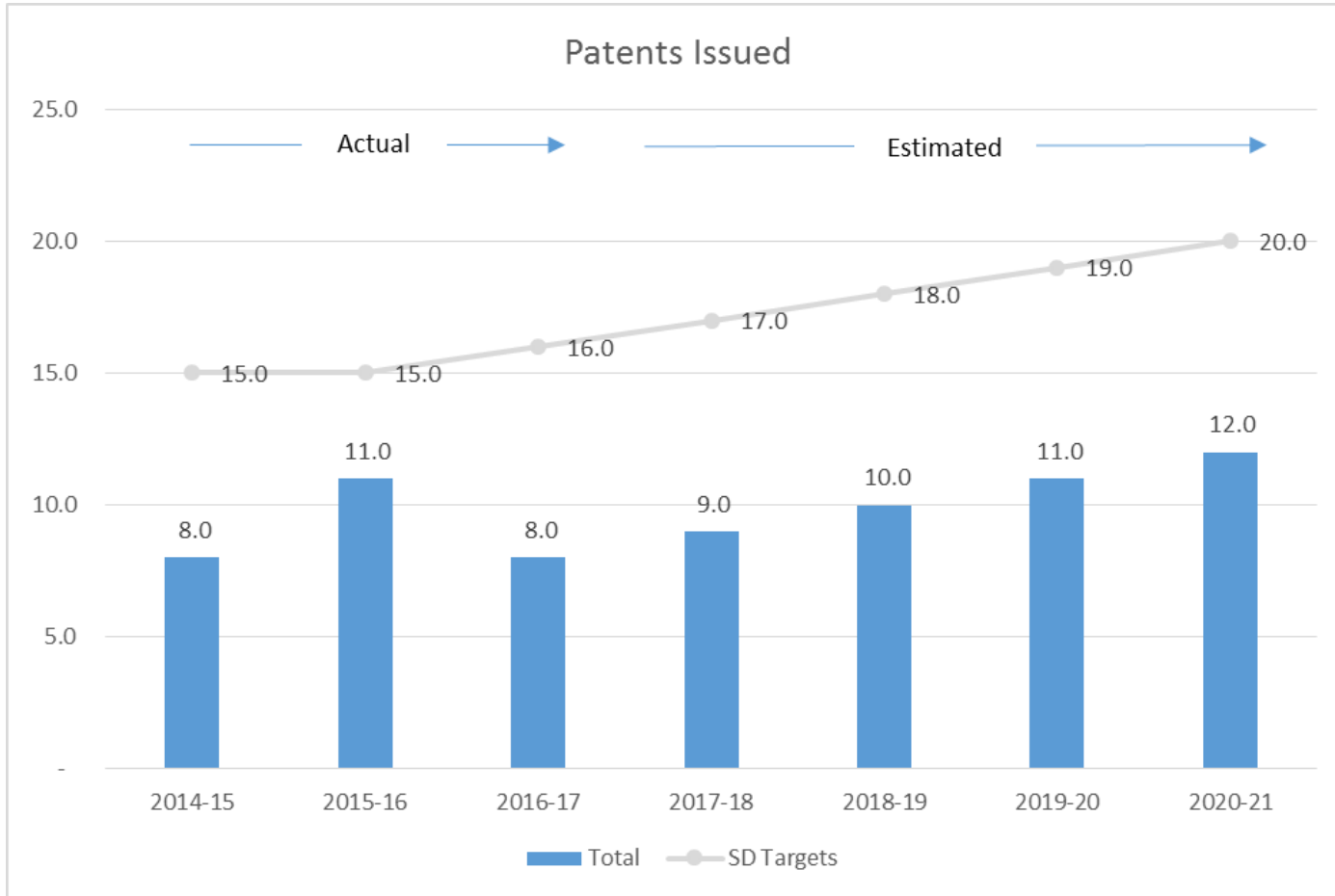
UH Historical Awards



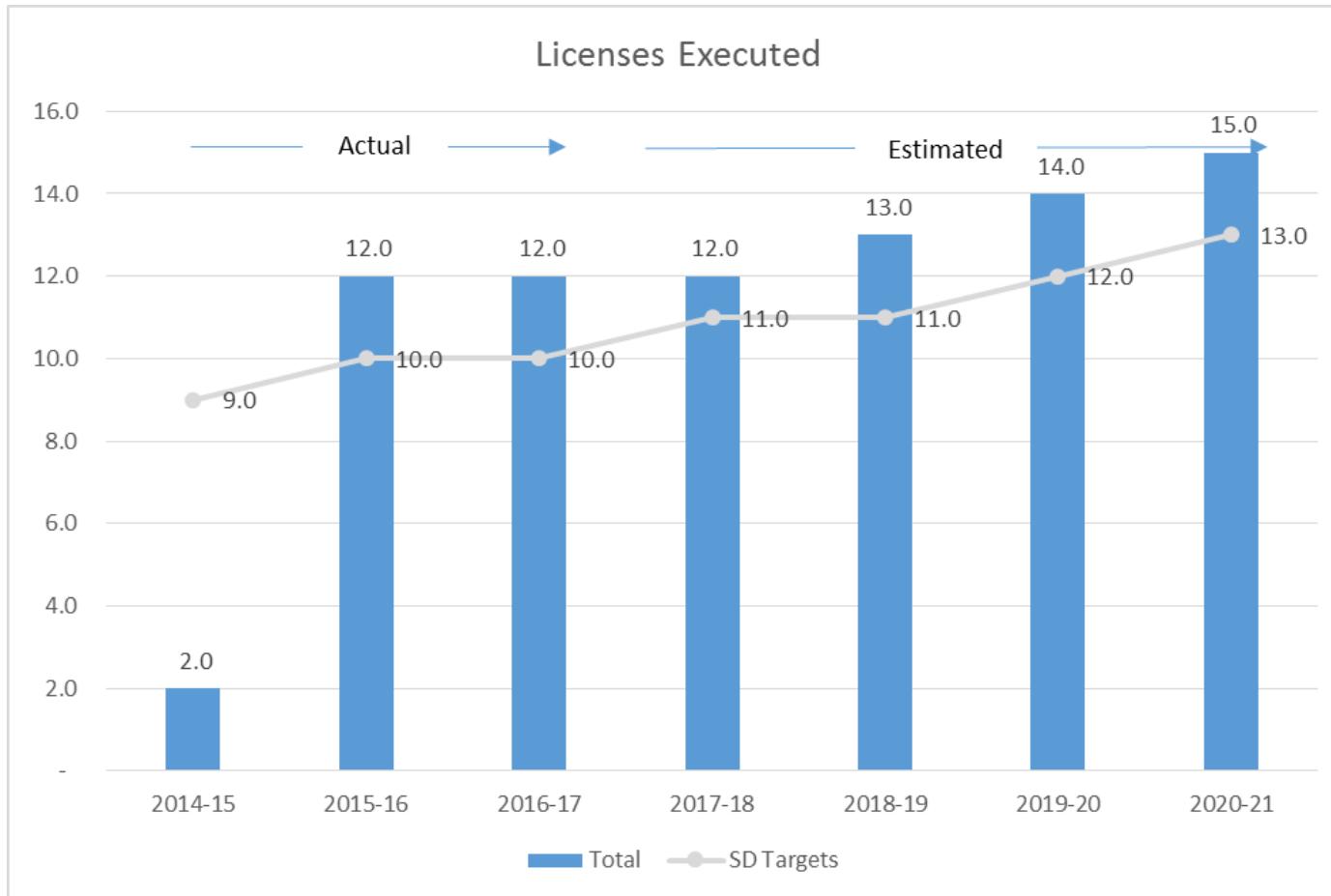
Invention Disclosures



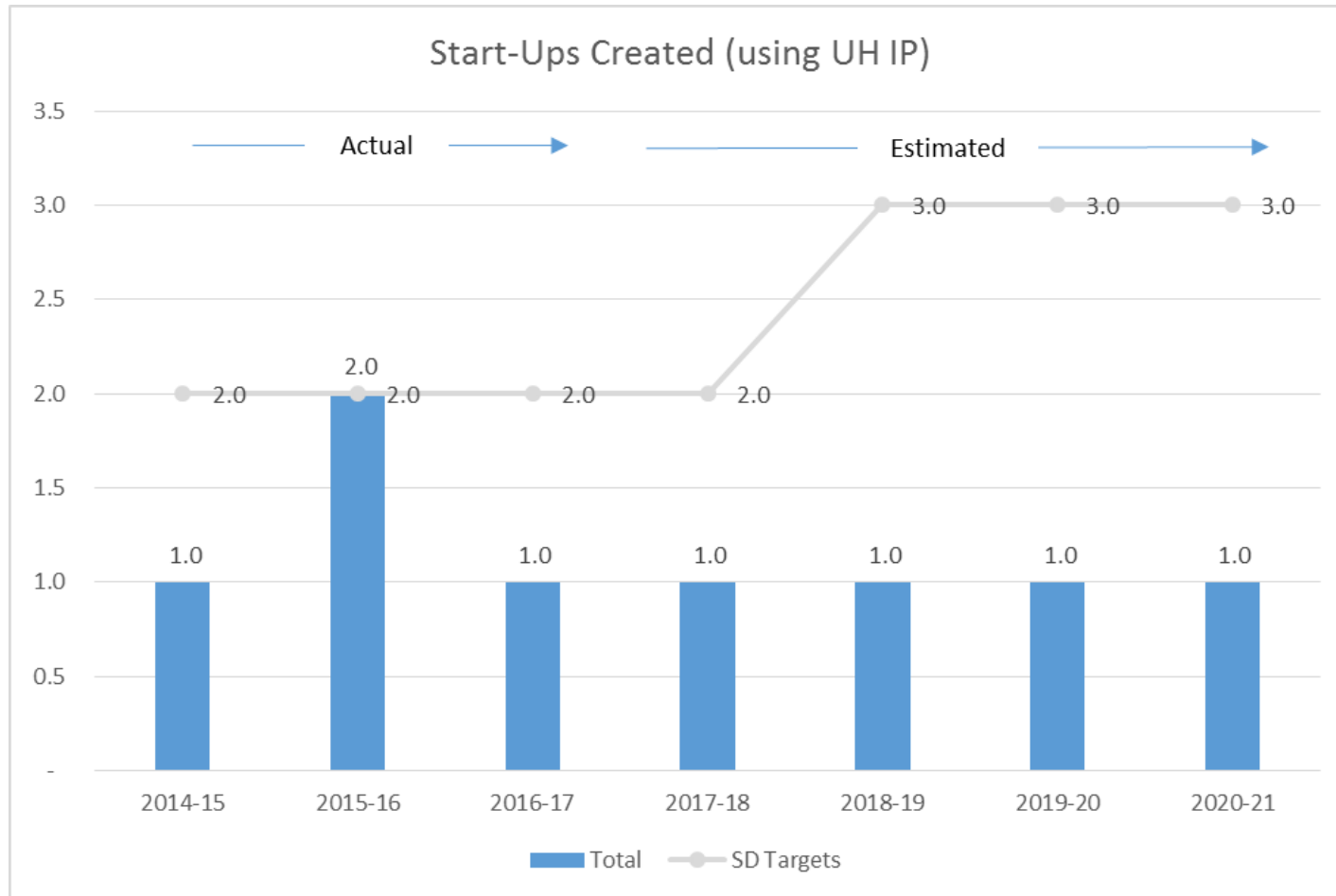
Patents Issued



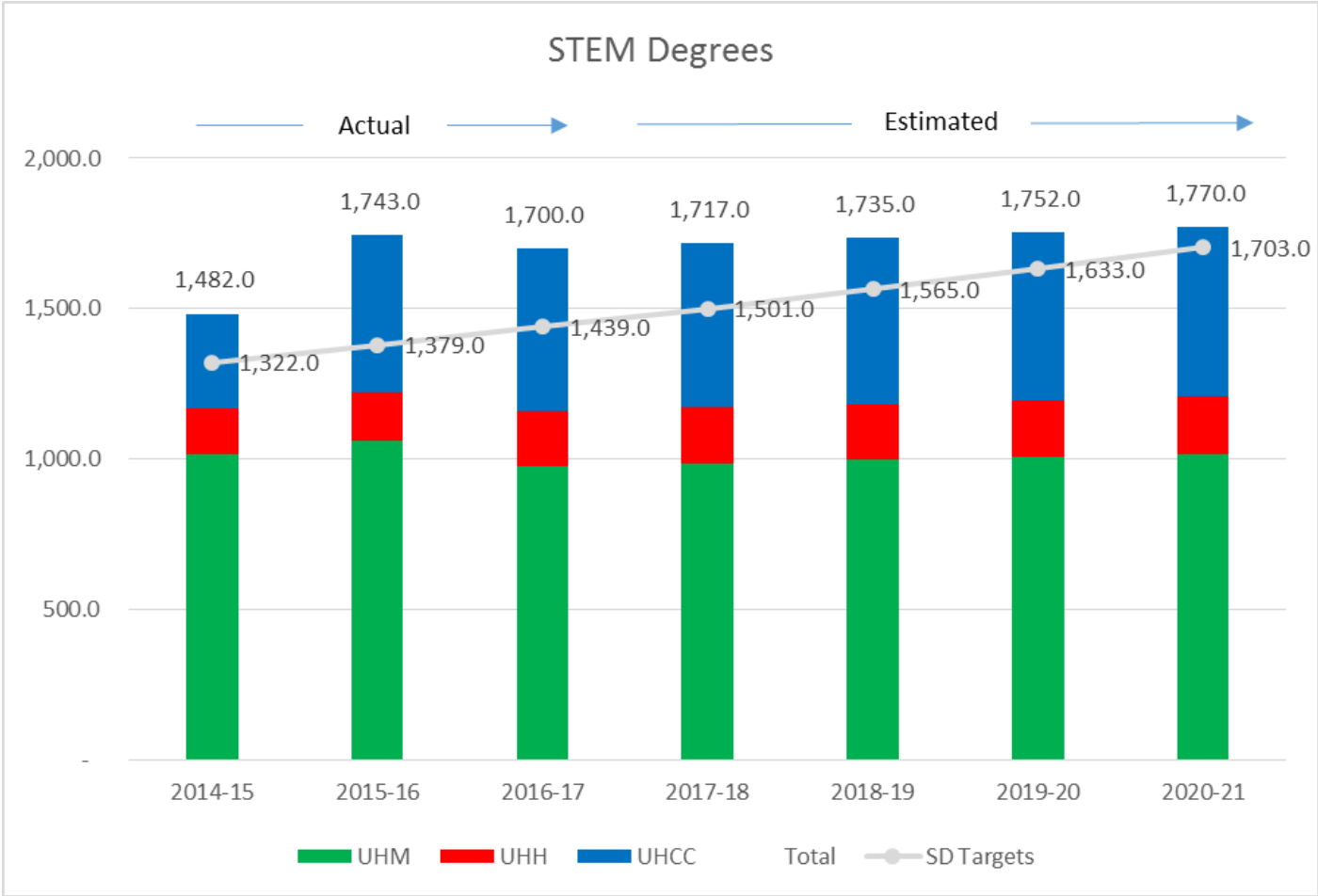
Licenses Executed



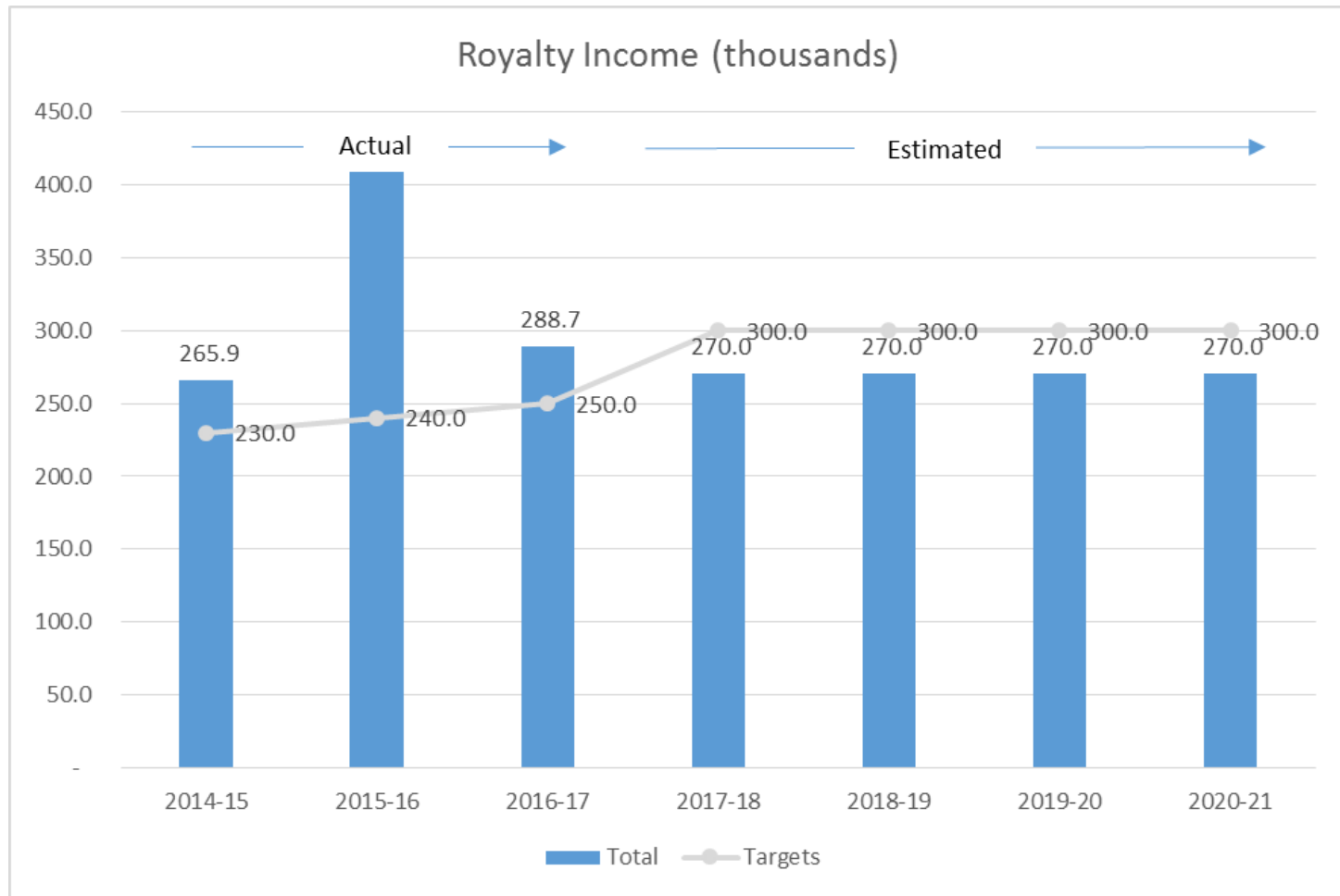
Start-Ups Created



STEM Degrees



Royalty Income



Proposed Metrics

Category	Strategic Directions Changes/Additions
Awards	<ul style="list-style-type: none">• N/A
Research Expenditures	<ul style="list-style-type: none">• N/A
IP Development, Patents and Licenses	<ul style="list-style-type: none">• Total royalty revenue• Number of active licenses and options (<i>instead of new</i>)• Number of start-ups (<i>broader inclusion than just licensed UH technology</i>)
Other	<ul style="list-style-type: none">• Jobs created because of innovation (<i>NEW</i>)



Strategy, Targets & Metrics of Office of Innovation & Commercialization

David Ai

MS(CS), MBA, J.D.

Chief Innovation Officer

Director, Office of Innovation & Commercialization

University of Hawai'i System

for

Board of Regents Committee on Research & Innovation

May 24, 2018

Office of Innovation and Commercialization (OIC)

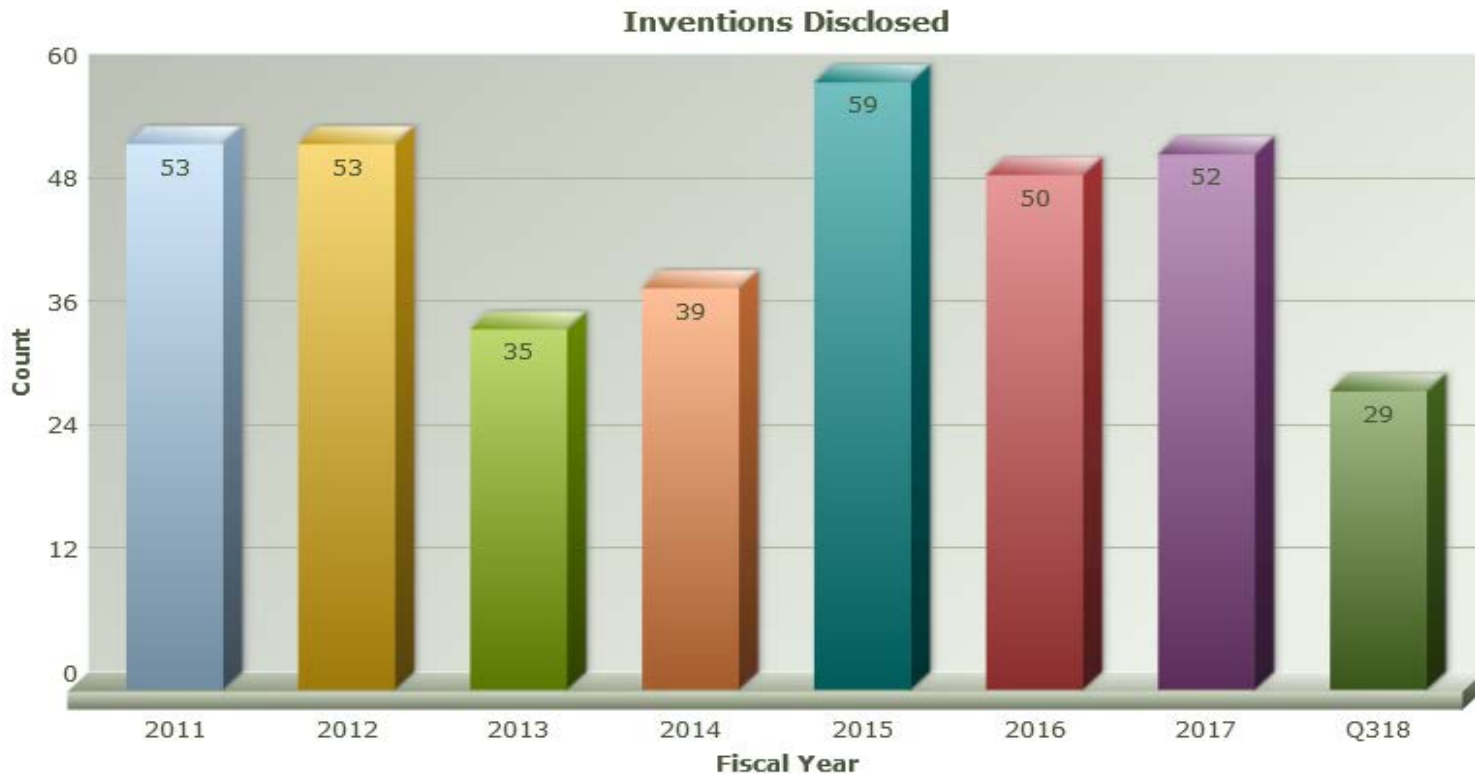
- The Office of Innovation and Commercialization (OIC) remains focused on commercializing UH intellectual property (IP) for the public's use, benefit, and access.
- Under the Office of the Vice President for Research and Innovation (OVPRI), OIC will be key to fulfilling the goals and action strategies laid out under the Hawaii Innovation Initiative (HII).
- Notably, OIC's mandate now includes the growing and sustaining of the ecosystem for innovation and entrepreneurship for the entire UH System.

FY18 Highlights

- New OIC Director hired effective March 2018, and also serves as UH's Chief Innovation Officer under the Office of the Vice President for Research and Innovation
- OIC'S efforts to build upon industry connections, partnerships and engagements
 - UH Technology Showcase
 - First Look LA
 - Partnership with Skysong Innovations (formerly AzTE)
 - Other potential partners
- Improved efficiencies and effectiveness
 - Reduced costs to file provision patent applications
 - Online invention disclosure process

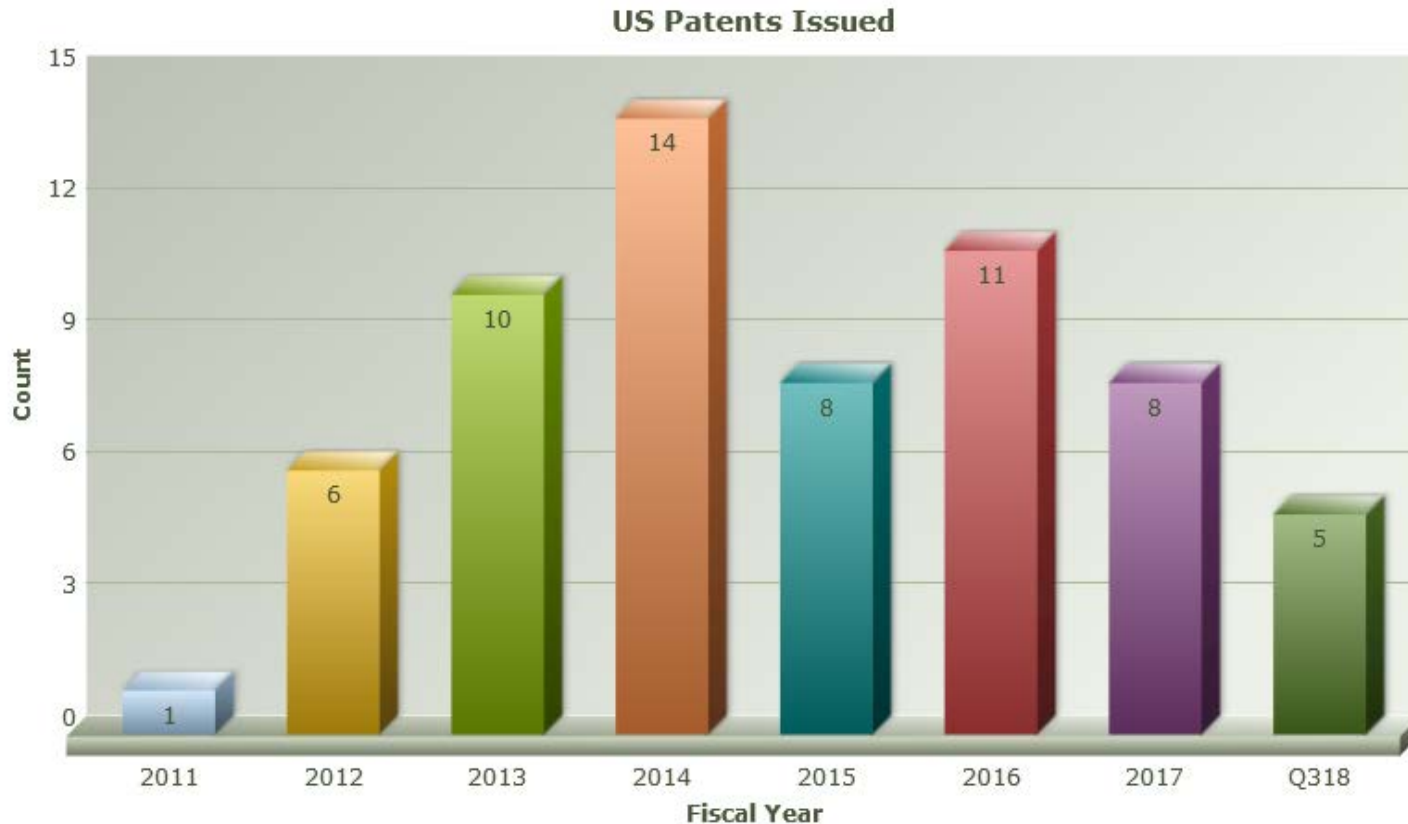
Technology Transfer Metrics (Invention Disclosures)

- Disclosures of new inventions by UH faculty and staff researchers vary from year to year, but have been steadily increasing from about 30 per year at the end of the last decade to an average of at least 50% more disclosures per year than the prior decade. FY 2018 number is cumulative through Q3 of FY18 (through March 2018).



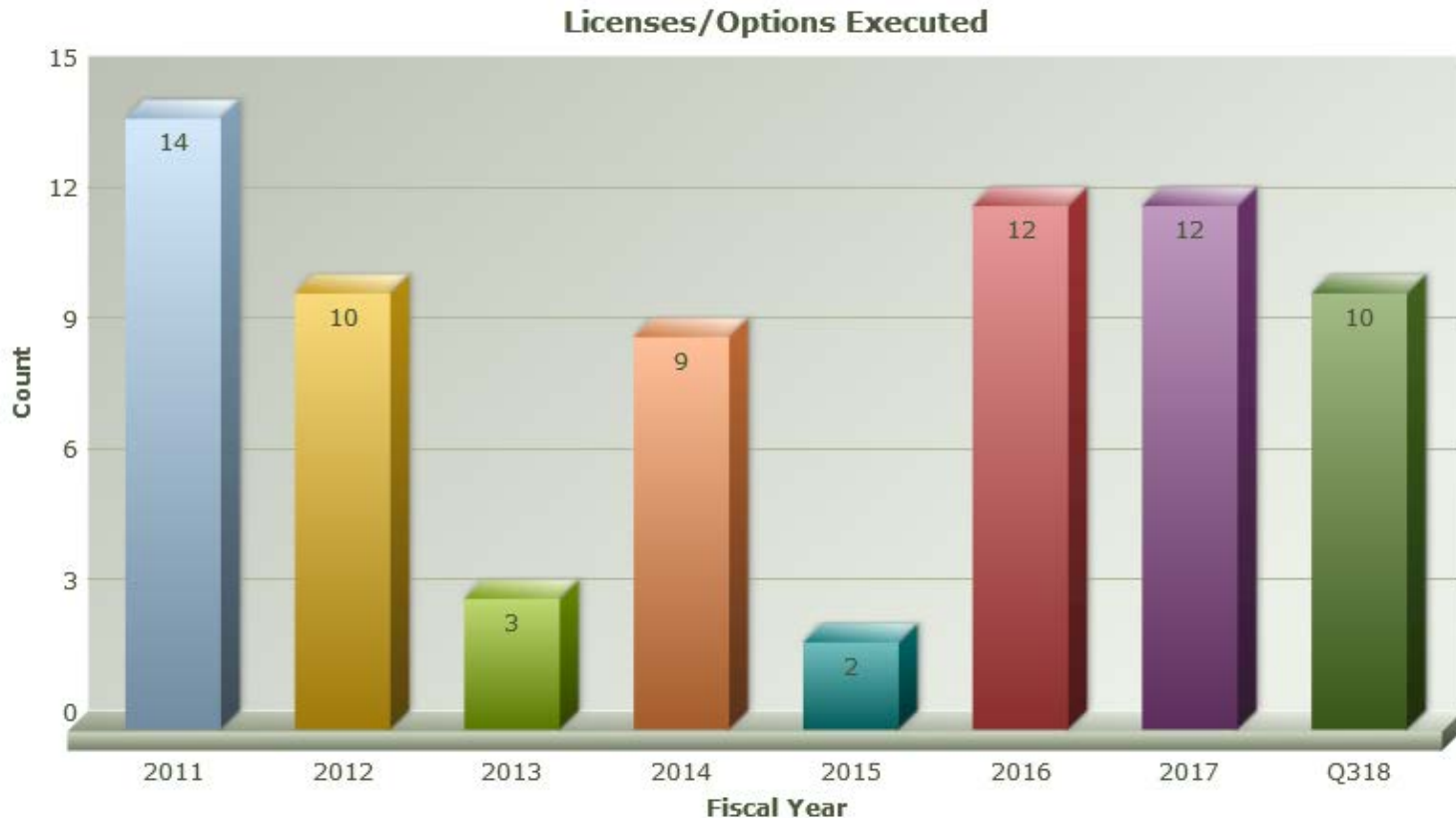
Technology Transfer Metrics (US Patents)

- The number of U.S. patents filed and issued also varies from year to year, but increases in proportion to the growth in invention disclosures received, with an expected lag since patent applications are filed after intake and evaluation of new invention disclosures. FY 2018 number is cumulative through Q3 of FY18 (through March 2018).

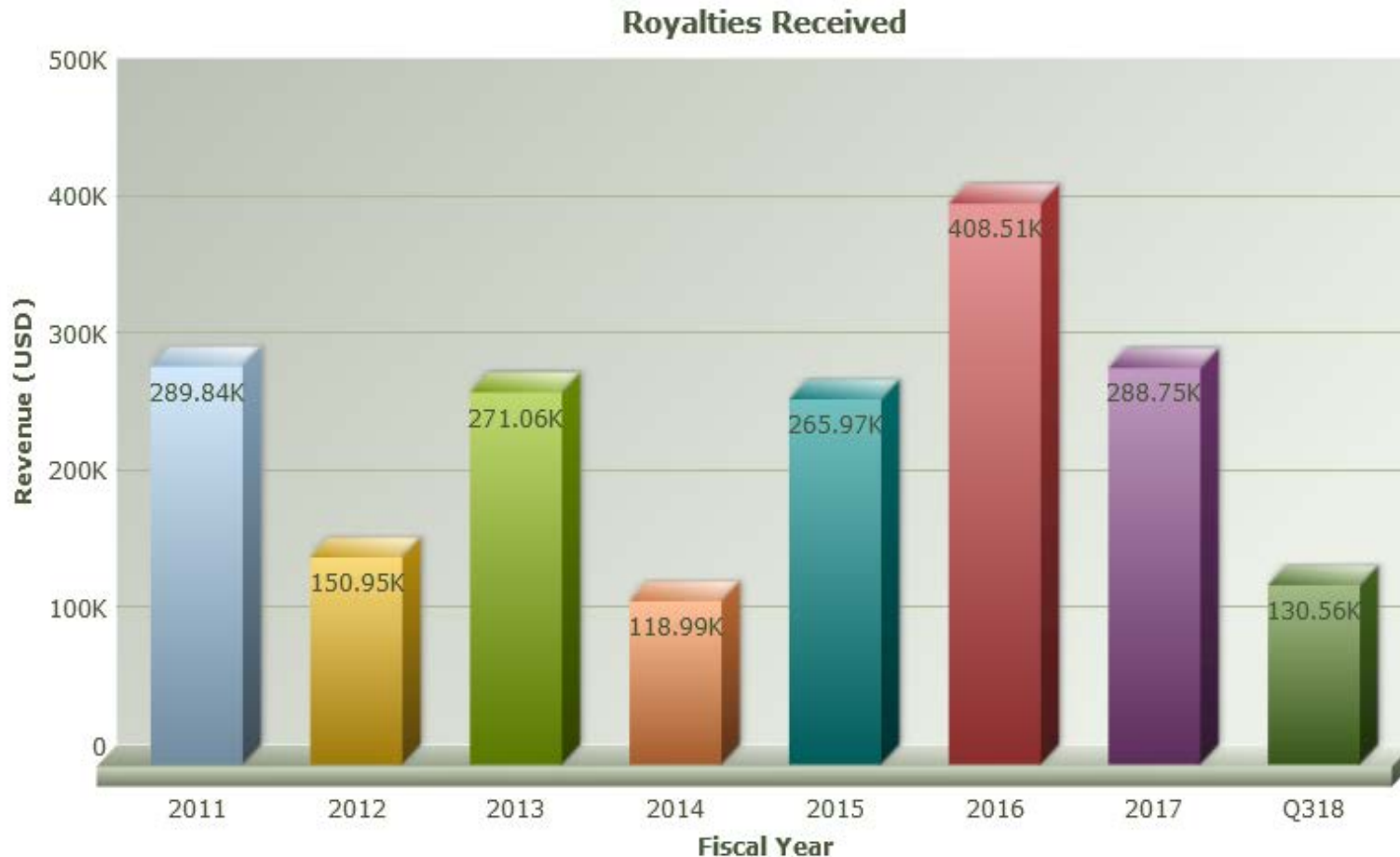


Technology Transfer Metrics (Licenses/Options Executed)

- New licenses and options executed each year for technologies disclosed and patented is highly variable but has been averaging at least 10 a year over recent periods. Revenues from licensing and legal expenses for patent protection are likewise highly variable. FY 2018 number is cumulative through Q3 of FY18 (through March 2018).



Technology Transfer Metrics (Royalties Received)



Hawai'i Innovation Initiative – OIC's Role

- **HII Action Strategy 1: Sustain and advance the UH research enterprise**
 - Continue efforts to build upon industry connections, partnerships and engagements
 - Continue to improve efficiencies and effectiveness by streamlining internal process
 - Source and identify new innovations and discoveries
 - Create new Lab Ambassador Program

- **HII Action Strategy 2: Advance innovation and entrepreneurship within UH and the community**
 - Work towards introducing new approaches to UH commercialization and technology acceleration efforts.
 - HI-END (Hawai'i Entrepreneurial Network Developers)
 - Integrate entrepreneurship and innovation through the UH educational experience for students

- **HII Action Strategy 3: Invest internal resources and seek external resources for strategic infrastructure requirements that leverage our location and strengths and address critical gaps**
 - Offer an educational Certificate in Innovation and Entrepreneurship to UH students

Strategic Objectives

Tech Transfer (TT) & Commercialization

- IP to benefit society
- Support innovators
- Generate income

















Innovation & Entrepreneurship (iE)

- Ecosystem for iE
- Grow entrepreneurs
- iE skillset for UH students



Strategic Implementation

Short-Term Initiatives (TT focus)

- Lab Ambassadors   
- Bio Materials Licensing   
- Speedy Patenting Process  
- Hi-Touch Tech Marketing   
- HI-END (HI Entrepr. Ntwk Developers)   

Long-Term Initiatives (iE focus; preliminary!)

- I-Corps (NSF Program)    
- iE Certificate    

APPLIED RESEARCH LABORATORY
UNIVERSITY OF HAWAII

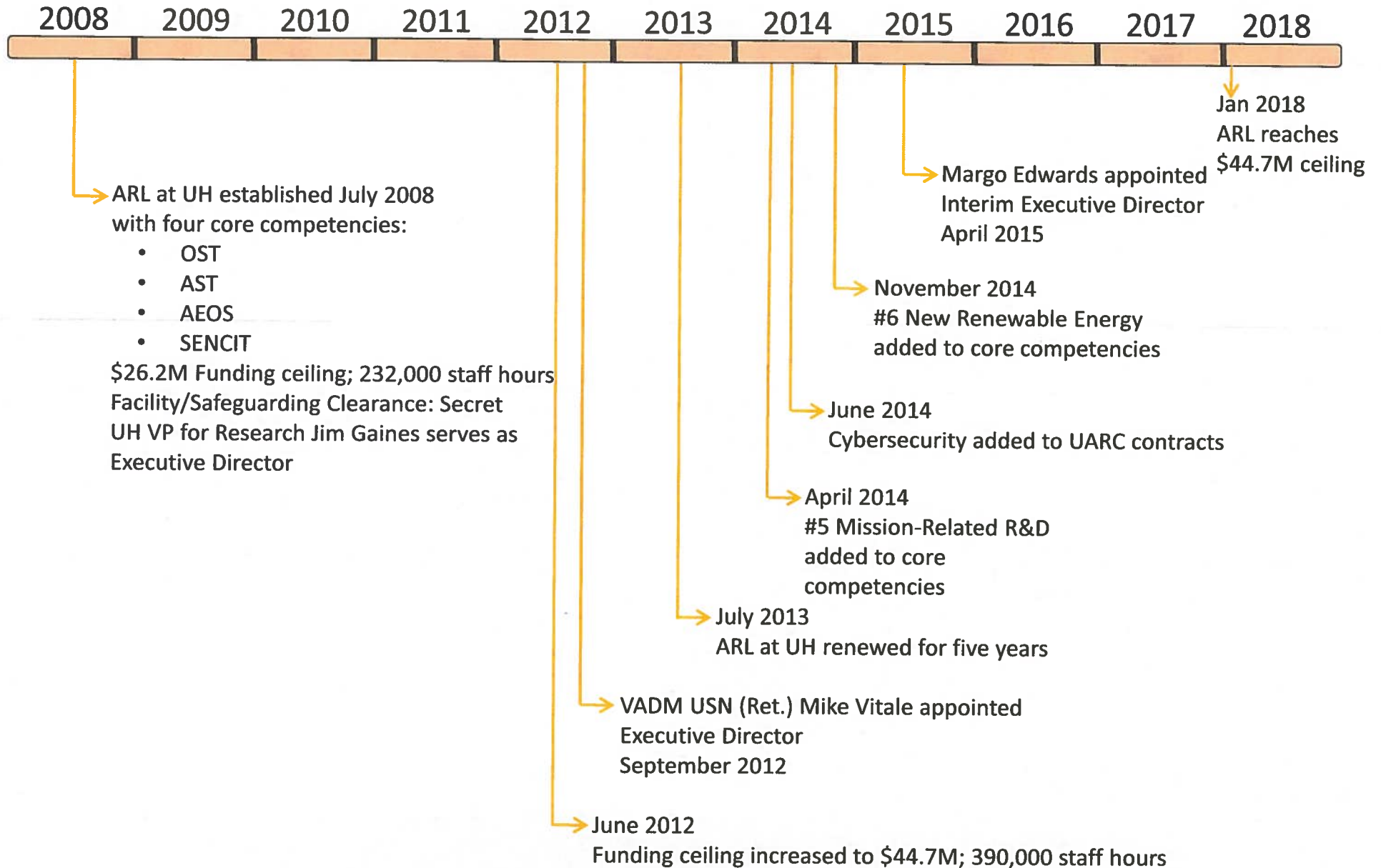
Presentation for
BOR Committee on Research and Innovation
May 24, 2018

Applied Research Laboratory at the University of Hawai`i

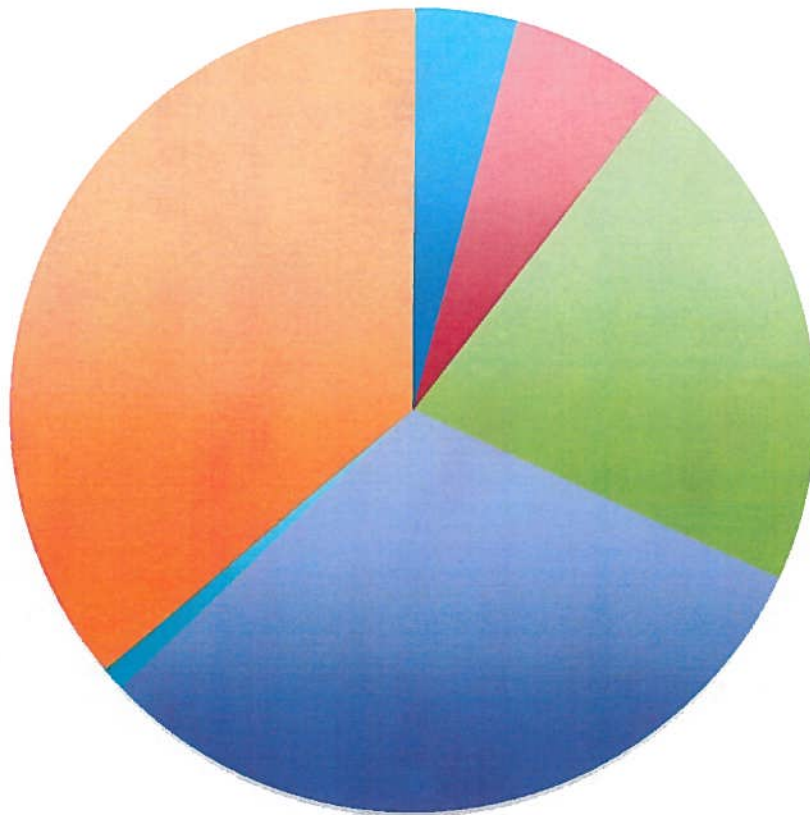
Five Navy University-Affiliated Research Centers (UARCs):

- Johns Hopkins University Applied Physics Laboratory
 - Founded **1942**
 - Primary Focus: Missiles and Satellites
- Applied Physics Laboratory of the University of Washington (APL-UW)
 - Founded **1943**
 - Primary Focus: Acoustics and Arctic Operations
- Applied Research Laboratory at Pennsylvania State
 - Founded in **1945**
 - Primary Focus: Undersea Warfare and Underwater Systems
- Applied Research Laboratories, the University of Texas at Austin
 - Founded in **1945**
 - Primary Focus: Acoustics and Global Positioning
- **Applied Research Laboratory at the University of Hawai`i**
 - Established: ***July 15, 2008***
 - Primary Focus: Remote Sensing/Intelligence, Surveillance and Reconnaissance
 - End Date for Present Contract: ***July 14, 2018***
 - Total Ceiling Allotment: \$44.7M for original ten-year contract
 - 2018 Ceiling Supplement: **\$15M**, bringing total for first ten years to **~\$60M**

ARL@UH Timeline – First Decade



ARL@UH Core Competencies

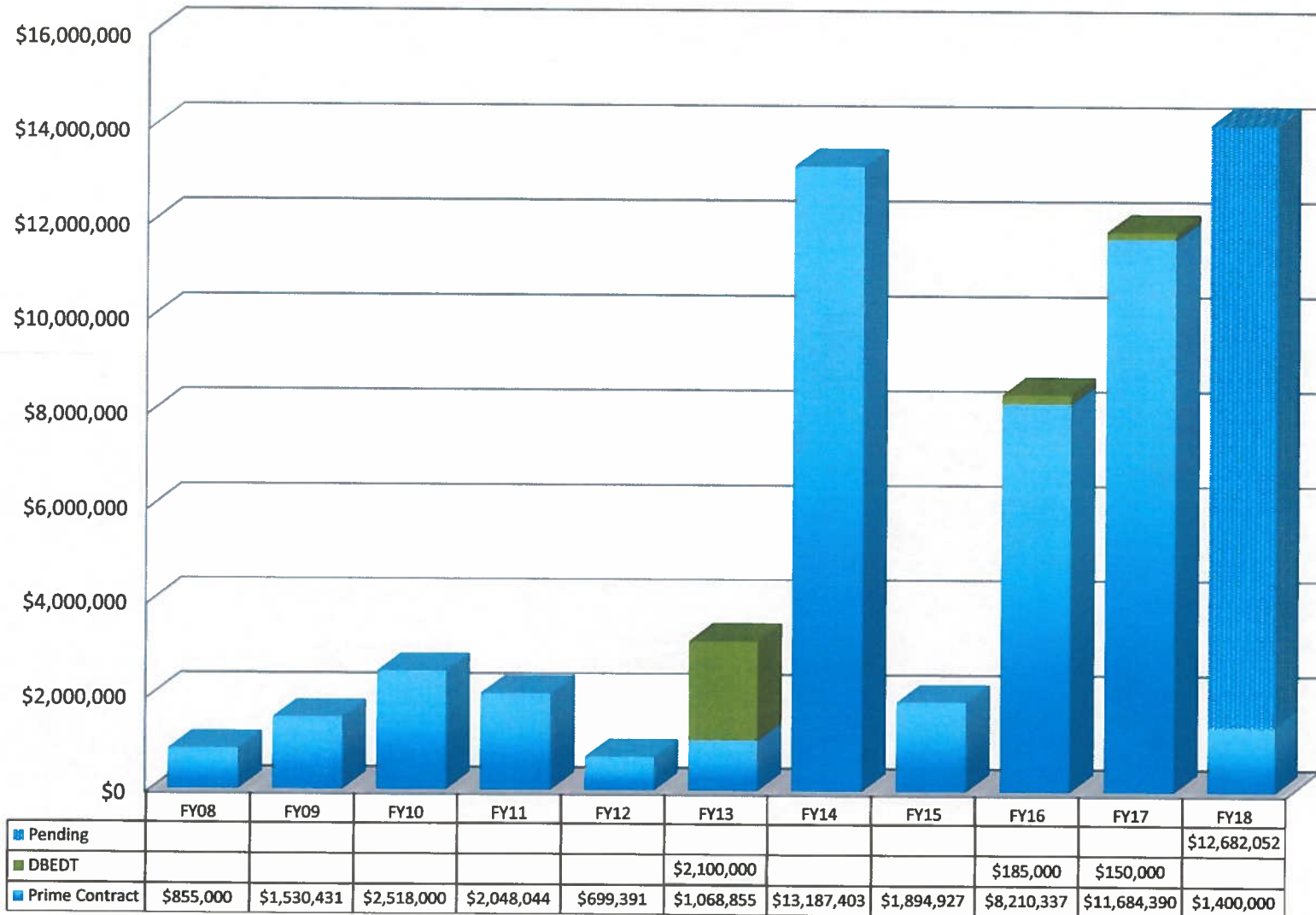


#1: Ocean Science and Technology	\$1,837,835
#2: Astronomy	\$2,858,839
#3: Advanced Electro-Optics and Sensing	\$9,644,806
#4: Sensors, Communications, and Information Technology	\$13,971,739
#5: Mission-Related R&D	\$425,930
#6: New Renewable Energy	\$16,370,178

Total* **\$45,114,327**

* Total exceeds current ceiling in anticipation of expected ceiling increase.

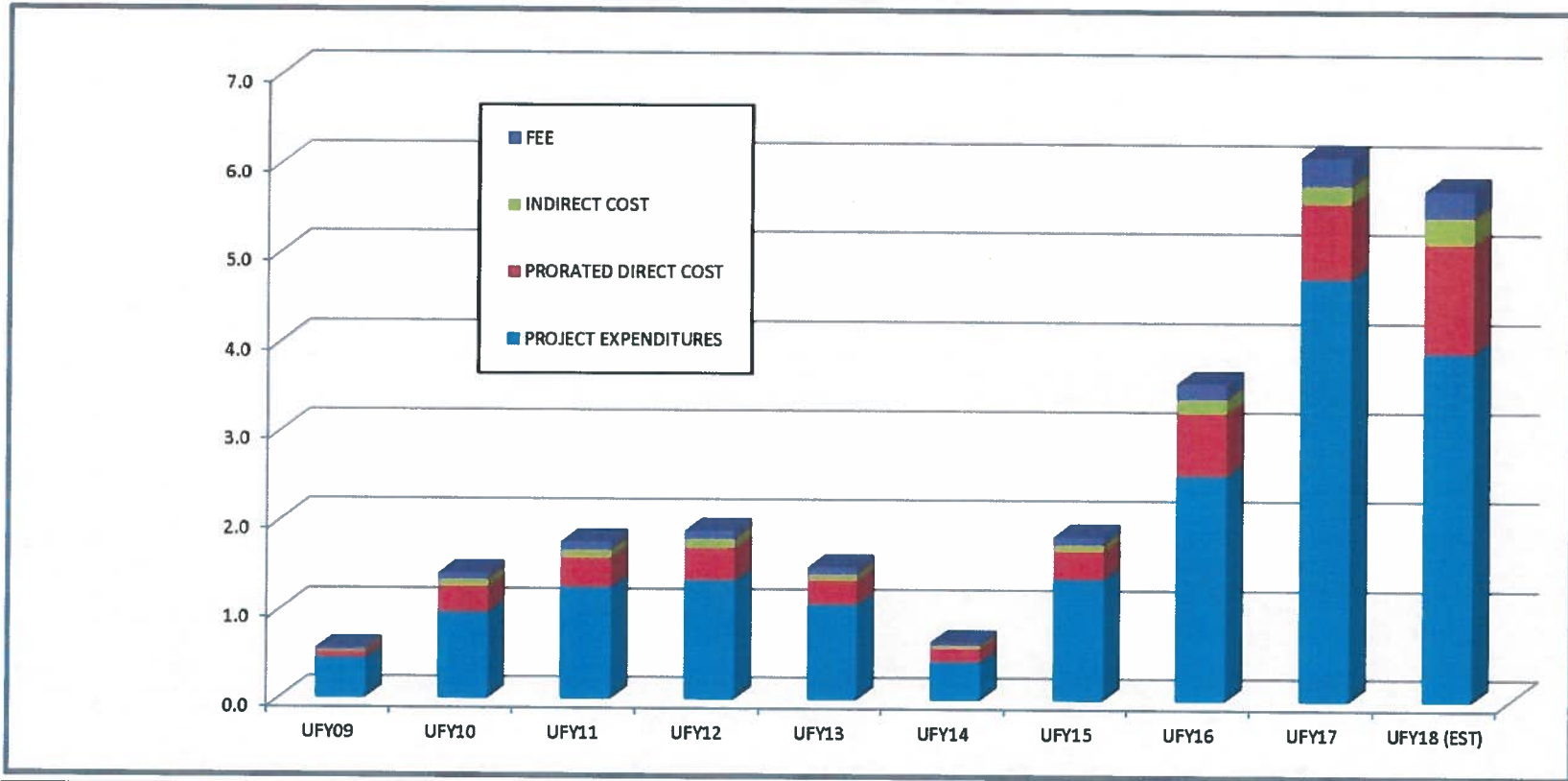
Project Awards per Federal FY (10/1-9/30)*



*Most tasks awarded in August/September

Project Expenditures per UH FY (7/1-6/30)

APPLIED RESEARCH LAB - REVENUE



\$ IN MILLIONS	UFY09	UFY10	UFY11	UFY12	UFY13	UFY14	UFY15	UFY16	UFY17	UFY18 (EST)
PROJECT EXPENDITURES	0.4	1.0	1.3	1.3	1.1	0.4	1.4	2.5	4.7	3.9
PRORATED DIRECT COST	0.1	0.3	0.3	0.4	0.3	0.2	0.3	0.7	0.8	1.2
INDIRECT COST	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.3
FEE	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.3	0.3
TOTALS (\$M)	0.6	1.4	1.8	1.9	1.5	0.7	1.8	3.6	6.1	5.7

Summary of Currently Active Tasks

45 Tasks Awarded since ARL was Established

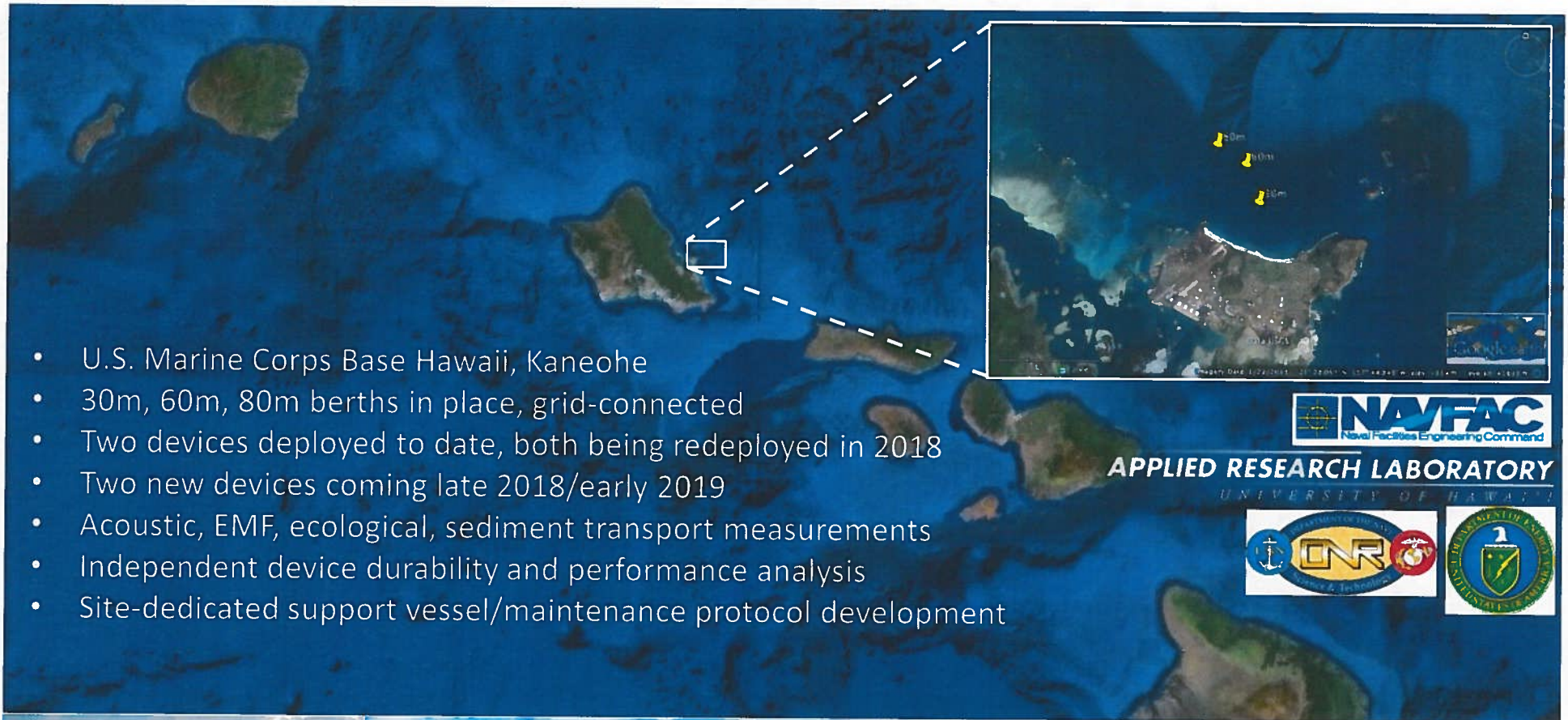
Contract Cost and Hours Expenditure Report

As of February 28, 2018

<u>Task Order</u>	<u>Task Title</u>	<u>ROF Date</u>	<u>End Date</u>	<u>Cost</u>
0016	Hawaii Wave Energy Testing Site (WETS)	7/16/2014	3/29/2019	9,001,059.00
0019	Navy Hawaii Infrastructure Modernization	9/4/2014	12/21/2018	2,500,000.00
0026	MHPCC Solutions to Pacific Theater HPC & C41 Requirements	6/1/2016	5/31/2018	200,000.00
0028	Energy Efficient Environmentally Compliant USV	7/14/2016	7/13/2018	100,000.00
0033	Additional Tasking for ARL/HNEI WETS Research	9/26/2016	9/28/2019	3,747,990.00
0034	NAVFAC Hawaii Advanced Inverter Demonstration Project	9/8/2016	5/7/2018	395,628.00
0035	NAVFAC Marianas Renewable Energy Integration Project	9/8/2016	9/7/2018	182,252.00
17F8800	Infrared Celestial Reference Frame Observation using UKIRT	7/20/2017	4/19/2018	700,000.00
17F8801	R&D for DOD Vanguard Center for High Performance Computing	8/11/2017	11/10/2018	9,996,329.00
17F8802	MHPCC Solutions to Pacific Theater HPC & C41 Requirements III	9/20/2017	9/19/2019	770,838.00
17F8803	Analysis of Acoustics Recordings from Pearl Harbor Main Channel	9/20/2017	9/19/2018	24,728.00
17F8804	HoloLens Training and Safety Tool	9/25/2017	9/24/2018	58,374.00
17F8805	Automatic Identification System Heads Up Display (AIS HUD)	9/26/2017	9/25/2018	50,624.00
17F8806	UAS-based Imagery for Underway Force Protection	9/26/2017	9/25/2018	38,496.00
18F8800	Infrared Celestial Reference Frame Observation using UKIRT II	1/31/2018	1/30/2019	1,400,000.00
Total				<u>\$29,166,318.00</u>

Internal R&D Investment

Title	Unit	Award
Energy from a Small Wave Drone	College of Engineering	\$62,438
Cybersecurity for Internet of Things	College of Engineering	\$45,079
Cybersecurity for ARL Tasks	HIGP/SOEST	\$26,969
Neutron Detector for Radioactive Materials	College of Natural Sciences	\$82,302
Unmanned Port Security Vehicle	HIGP/SOEST	\$78,152
Countering Unmanned Aerial Systems	College of Engineering	\$30,499
MOU with University of Porto on Unmanned Swarms	HIGP/SOEST	\$40,000
Nondestructive Microscale Materials	HIGP/SOEST	\$67,614
Cybersecurity for Internet of Things, Phase II	College of Engineering	\$67,624
Small Satellite Launch Sites	HIGP/SOEST	\$40,000
Testing of a Raman-Fluorescence Sensor	HIGP/SOEST	\$50,181
Nanocomposite Materials for Energy Storage	College of Engineering	\$30,000
	TOTAL FEE IRAD	\$620,858
	Total College of Engineering	\$235,640
	Total HIGP/SOEST	\$302,916
	Total College of Natural Sciences	\$82,302



- U.S. Marine Corps Base Hawaii, Kaneohe
- 30m, 60m, 80m berths in place, grid-connected
- Two devices deployed to date, both being redeployed in 2018
- Two new devices coming late 2018/early 2019
- Acoustic, EMF, ecological, sediment transport measurements
- Independent device durability and performance analysis
- Site-dedicated support vessel/maintenance protocol development



APPLIED RESEARCH LABORATORY

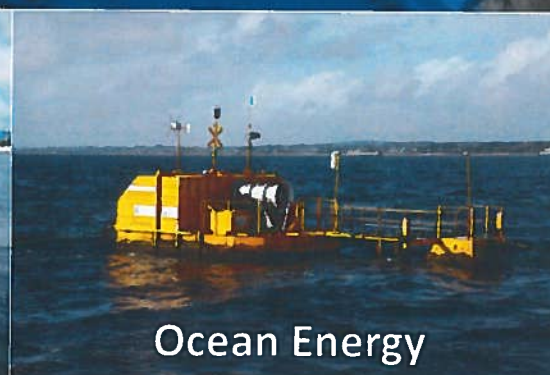
UNIVERSITY OF HAWAII



NWEI



Fred.Olsen



Ocean Energy

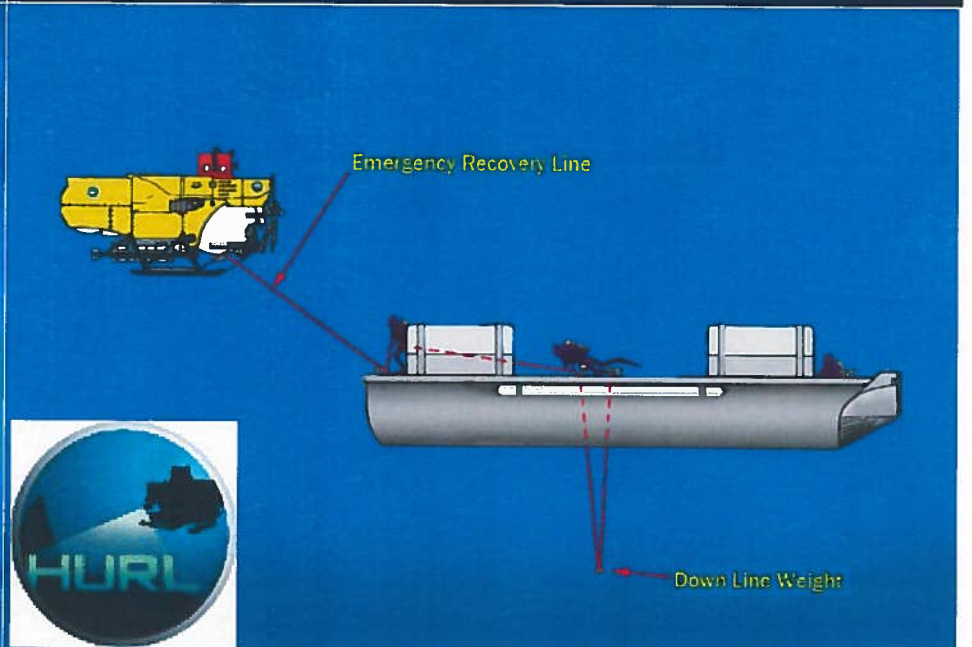
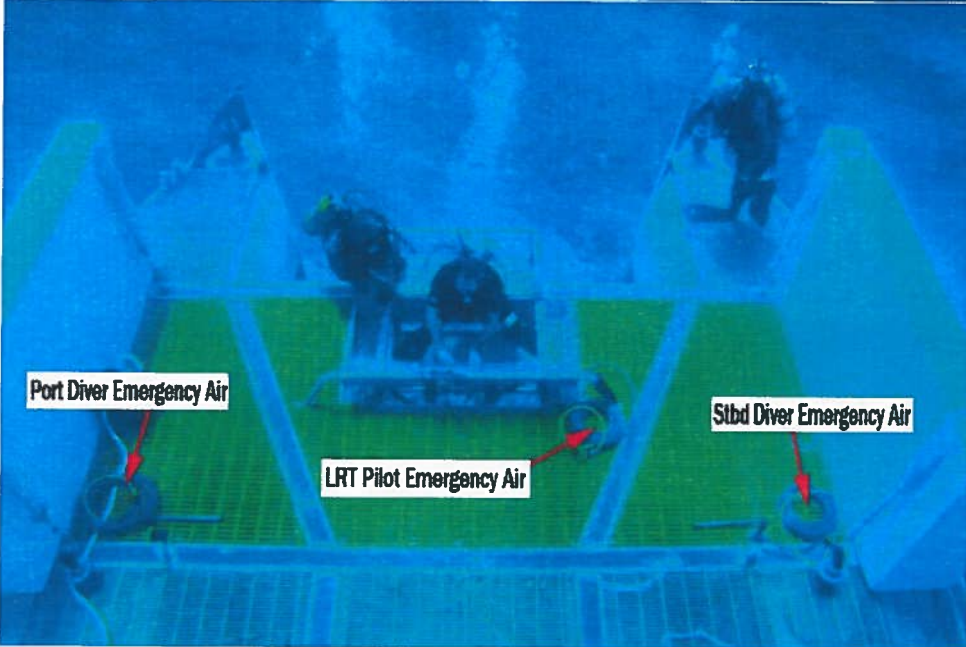
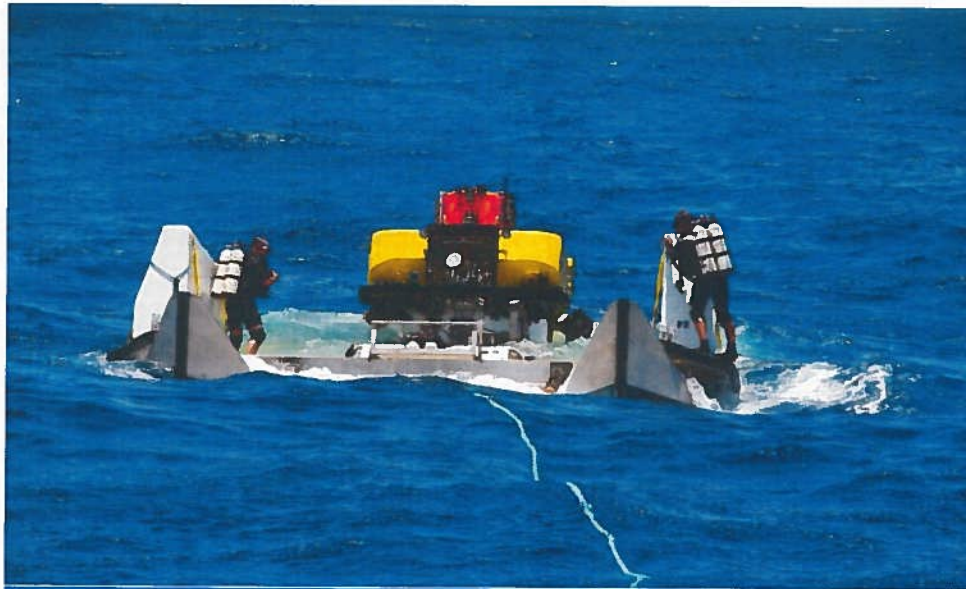


Columbia Power

Extramurally Funded Tasks: Wave Energy Test Site

Patrick Cross, Principal Investigator, Hawaii Natural Energy Institute (HNEI)

\$12.75M funded to date; ~\$5M pending for FY18



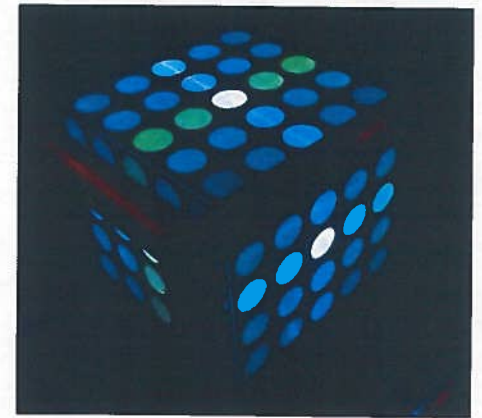
Extramurally Funded Tasks: Launch Recover Transport Vehicle Training

Alexander Shor, Principal Investigator, with Hawaii Undersea Research Lab (HURL)

Sponsored by USSOCOM

Internally Funded Tasks: NuLat Neutrino Lattice

John Learned, Principal Investigator, Physics Department
\$82K Internal Research and Development Support from ARL

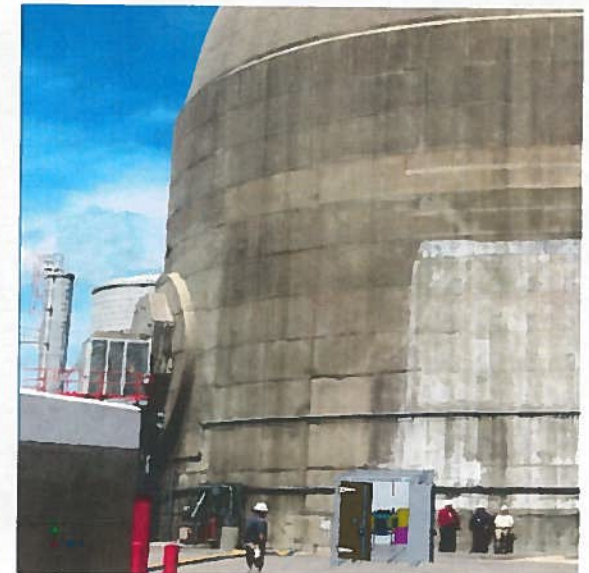


Key Features and Applications:

- Directional neutron and neutrino detection
 - Neutrinos help us find and investigate nuclear material
 - Nuclear reactor monitoring
 - Provides a new 'window' into physical phenomena: geothermal activity, supernovae, and the big bang

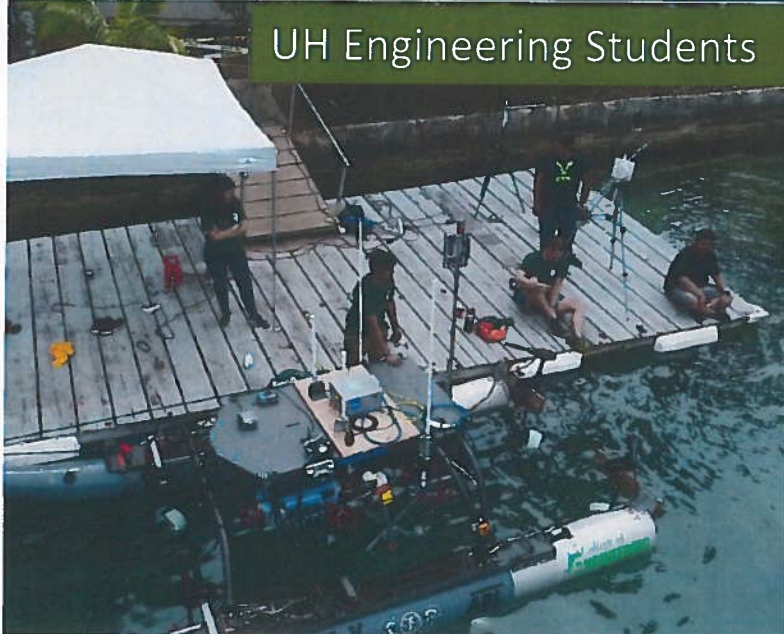


Simulated tests at a nuclear reactor



Potential deployment with shield (above left) at North Anna reactor (above)

Exercises: Coconut Island Unmanned Systems Demo 3/11/2018



Community Outreach: Drone Boot Camp 3/30/2018



Photos Courtesy D. Leong

Additional Benefits from ARL

1. State of Hawaii Legislature requests, via Senate Concurrent Resolution (SCR) 143, that ARL in concert with DBEDT convene a Hawaii Drone Working Group to advise and inform the legislature, public agencies, city and county councils and the public on the best practices to inform policy decisions regarding Unmanned Aerial Systems.
2. Providing pilots and training at the OVPRI's inaugural Drone Boot Camp, March 30, 2018.
3. Monthly gatherings between PACOM innovators and ARL, expanded to others in UH as appropriate, to generate and advocate ideas for the furtherance of operational support thru Technology to PACOM.
4. Provide a pathway for local high-tech industry to respond to ONR Tech Solution solicitations and other UARC-centric opportunities.

ARL Looking Forward

Next Contract

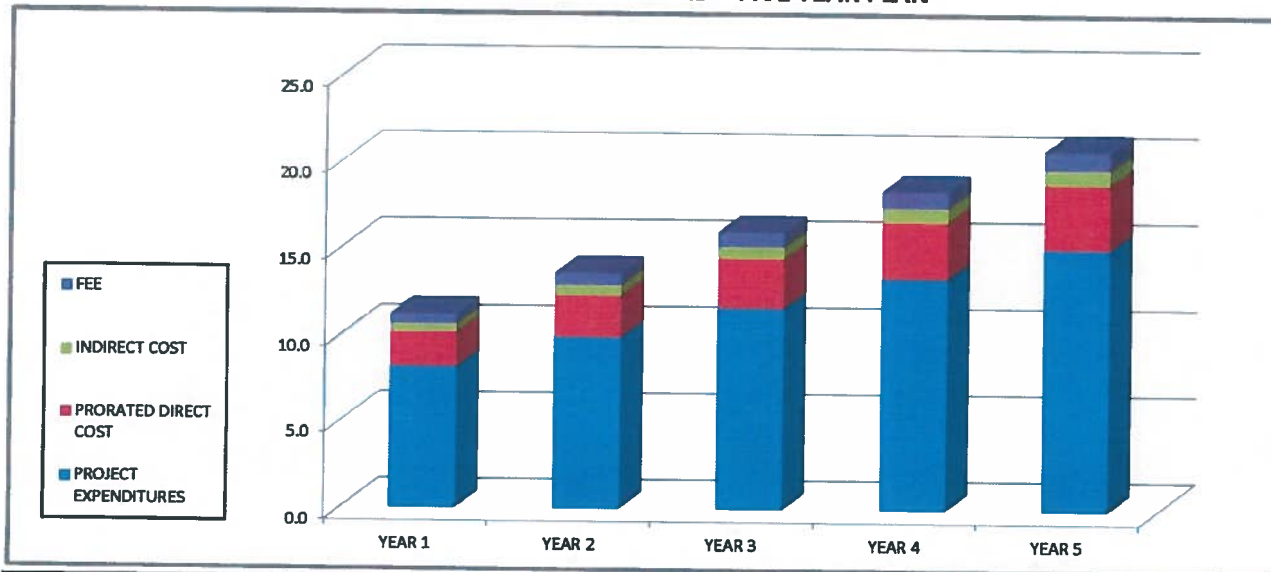
Duration: 5 years

Anticipated Ceiling Allotment: \$80M

Target Award Date: *July – September 2018*

Contract Security Level: Upgraded to Top Secret

UH APPLIED RESEARCH LAB - FIVE YEAR PLAN



ARL FIVE YEAR PLAN	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
LABOR HOURS	68,949	83,724	98,498	113,273	128,048	492,492
EXPENDITURES \$M						
PROJECT EXPENDITURES	8.1	9.9	11.6	13.4	15.1	58.2
PRORATED DIRECT COST	2.0	2.4	2.9	3.3	3.7	14.3
INDIRECT COST	0.5	0.6	0.7	0.8	0.9	3.4
FEE	0.6	0.7	0.8	0.9	1.1	4.1
TOTALS \$M	11.2	13.6	16.0	18.4	20.8	80.0

Appendix

ARL Activities 10/01/17-03/30/18

Date	Event	Stakeholders
3/30/2018	Drone Boot Camp	Public
3/22/2018	NCIS UAS pilot training	NCIS
3/15/2018	ARL tour w/DASN RDT&E Director Rapid Prototyping USW	Director Denise Crimmins
3/13/2018	ONR/ONRG tour of ARL	ONR, ONR global S&T advisors
3/11/2018	Field Demo, Coconut Island	NAVSEA, NAVAIR, ONR, ONR global, PACOM, NUWC, NASA, NOAA, State of Hawaii
3/6-7/2018	PACOM POST Conference booth	DoD, State of Hawaii, industry
3/2/2018	DARPA Persistent Living Sensors workshop	DARPA, Navy, USCG, industry
3/1/2018	Visit to Carderock Naval Surface WC	NSWC personnel
2/28/2018	Visit to Washington Navy Yard	NAVSEA UARC staff
2/26-27/18	UARC Cybersecurity meeting	UARC cybersecurity experts, FBI, NCIS
2/14/2018	ARL tour w/incoming PACFLT S&T advisor	USAF Colonel Michael Artelli
2/8/2018	ARL tour w/DASN RDT&E, PEO IWS	DASN William Bray, Director Michael Roberts
2/6/2018	NUWC collaboration meeting	NUWC (Ford Island) personnel
2/1-4/2018	Torpedo Recovery Exercise	SUBPAC
1/29-31/2018	SOFWERX Thunderdrone	DoD, DHS, industry
1/23/2018	ARL tour w/COMSUBPACFLT Oceanographer	CAPT Ash Evans
1/8-12/2018	DC visit to Navy sponsors/Pentagon	NAVFAC, ONR, ODASA, Navy Oceanographer
12/11/2017	Visit to SPAWAR, Pearl Harbor	SPAWAR staff
11/29/2017	Task Force Ocean	Oceanographer of the Navy
11/28/2017	Domestic Drone Security Series	DoD, DHS, industry
10/30-11/1/2017	Field Demo, Waikalua Loko	PACOM, NUWC, ONR, NOAA, State of Hawaii
10/26/2017	Head, Astrometry Department, USNO visit	Dr. Bryan Dorland
10/25/2017	ARL tour w/SPAWAR San Diego	Admiral "Boris" Becker and staff
10/19/2017	UAV video of Pacific Paradise grounding	USCG
10/19-20/2017	SOEST Open House drone demo	Public
10/5/2017	LAVA tour w/SUBPAC personnel	PACOM

**Item IV.A.7.
Committee Annual
Review**

**ITEM TO BE
DISCUSSED AT
MEETING**

Committee on Research and Innovation
Annual Review for the 2017-18 Academic Year

Goals established at the September 7, 2017 meeting.

	DUTIES per Bylaws	GOALS per September 7, 2017 meeting	ACCOMPLISHMENTS
1	Evaluate and approve long range plans that establish the strategic goals and objectives for research, innovation, and technology transfer at the University.	<ul style="list-style-type: none"> ➤ R&I Long Range Plan progress and proposed implementation metrics 	<ul style="list-style-type: none"> ➤ Progress Report on UH Mānoa Research Strategy – R&I Long Range Plan (September 2017) ➤ UH West O’ahu Presentation – R&I Long Range Plan (February 2018)
2	Review and make recommendations regarding investments, policies, and practices relating to University research, innovation and technology transfer programs.	<ul style="list-style-type: none"> ➤ F&A rate proposal review and negotiation ➤ Strategic hiring and investments ➤ Office of Innovation and Commercialization and Technology Transfer policy transformation (Phase 2) ➤ Proposed commercialization structure 	<ul style="list-style-type: none"> ➤ Update on UH F&A Cost Rate Proposal (<i>May 2018 – pending</i>) ➤ Progress Report on UH Mānoa Research Strategy (September 2017) ➤ Update on Office of Innovation and Commercialization (<i>May 2018</i>) ➤ Update on Patent and Copyright Policies (<i>May 2018</i>)
3	Review and make recommendations on proposals to establish or to terminate Organized Research Units (ORU) and research centers.	<ul style="list-style-type: none"> ➤ UH Mānoa research strategy, including ORUs ➤ UH Cancer Center NCI designation 	<ul style="list-style-type: none"> ➤ Progress Report on UH Mānoa Research Strategy (September 2017) ➤ Update on UH Cancer Center P30 Proposal and Status (November 2017) Proposal Submitted September 2017 NCI Visit January 2018 Decision ECD June 2018 ➤ ARL Briefing (<i>May 2018</i>)
4	Work in concert with Administration to establish performance goals and metrics to evaluate progress against the strategic goals and objectives.	<ul style="list-style-type: none"> ➤ R&I Long Range Plan progress and proposed implementation metrics 	<ul style="list-style-type: none"> ➤ Quarterly Research & Innovation Metrics Updates ➤ Update on Strategic Research & Innovation/HII Metrics (<i>May 2018</i>)