



INTERIM ISSUE BRIEF: USTAR ACHIEVEMENTS, EXPENDITURES, AND NONLAPSING BALANCES

BUSINESS, ECONOMIC DEVELOPMENT, AND LABOR APPROPRIATIONS SUBCOMMITTEE
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ISSUE BRIEF

SUMMARY

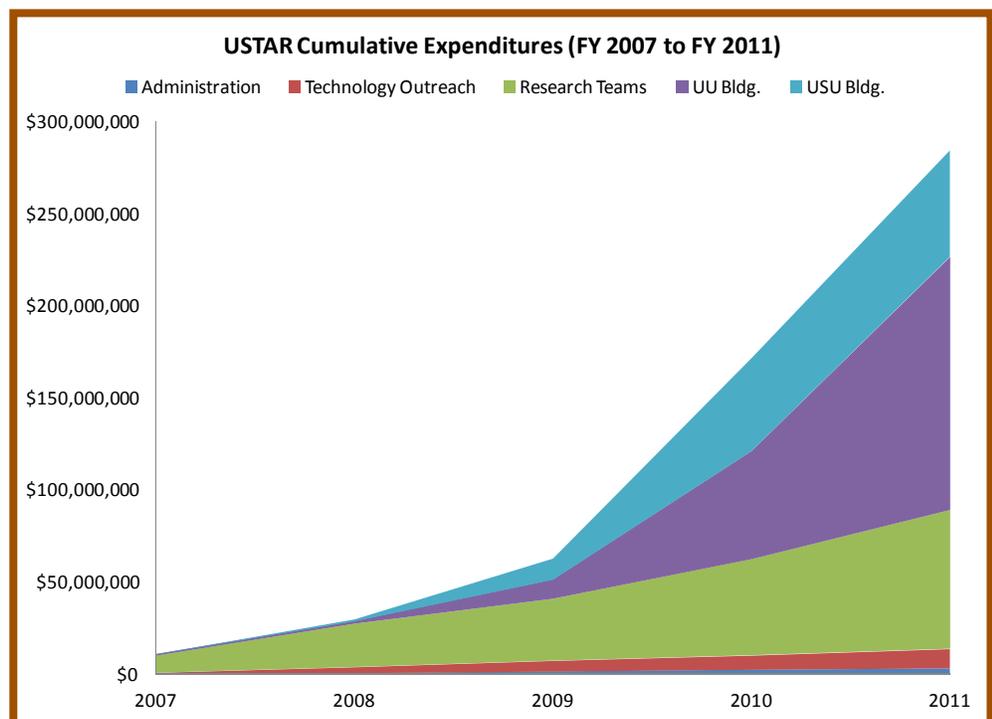
The Utah Science Technology and Research Initiative (USTAR) is entering its sixth year of existence. As an investment type of program, USTAR is following the J-curve process, where initial years of losses are anticipated to turn into deferred profits. The estimated net profit to the State through FY 2011 is roughly a loss of \$245 million. When comparing the net profit with the original economic prospectus, USTAR is running about on target, with the point estimate of revenue generated about \$15 million below target, but still within the margin of error.

While continuing to monitor USTAR's results, the Legislature may wish to address two issues in the coming session:

1. USTAR's Structural Deficit and Nonlapsing Balance: For the past three fiscal years, USTAR has used one-time federal assistance to fund ongoing operational costs. Absent further assistance, USTAR's projected ongoing expense budget will fall by \$4.6 million in FY 2013. USTAR has sufficient nonlapsing balances to cover the difference between its ongoing costs and ongoing revenue until FY 2013.
2. Performance Differential between the University of Utah and Utah State: USTAR funding is split between the University of Utah (60%) and Utah State University (40%). Based upon USTAR's own performance metrics, it appears that investment at the University of Utah yields higher returns than investment at Utah State.

BACKGROUND

In March 2006, the Legislature created USTAR with the intent of improving the State's competitive economic position. The Initiative has three major components: recruiting and hiring of top-notch research teams, construction of research buildings at the University of Utah and Utah State University, and operation of a technology outreach program at four locations throughout the State. To date, USTAR has five research areas at the University of Utah: energy technology; medical imaging technology and brain medicine; biodevice and biopharma; imaging technology and digital media; and nanotechnology. It has three research areas at Utah State University: energy innovations; earth and space innovations; and bioinnovations. Further details are available at http://www.le.utah.gov/lfa/reports/cobi2011/agcy_714.htm.

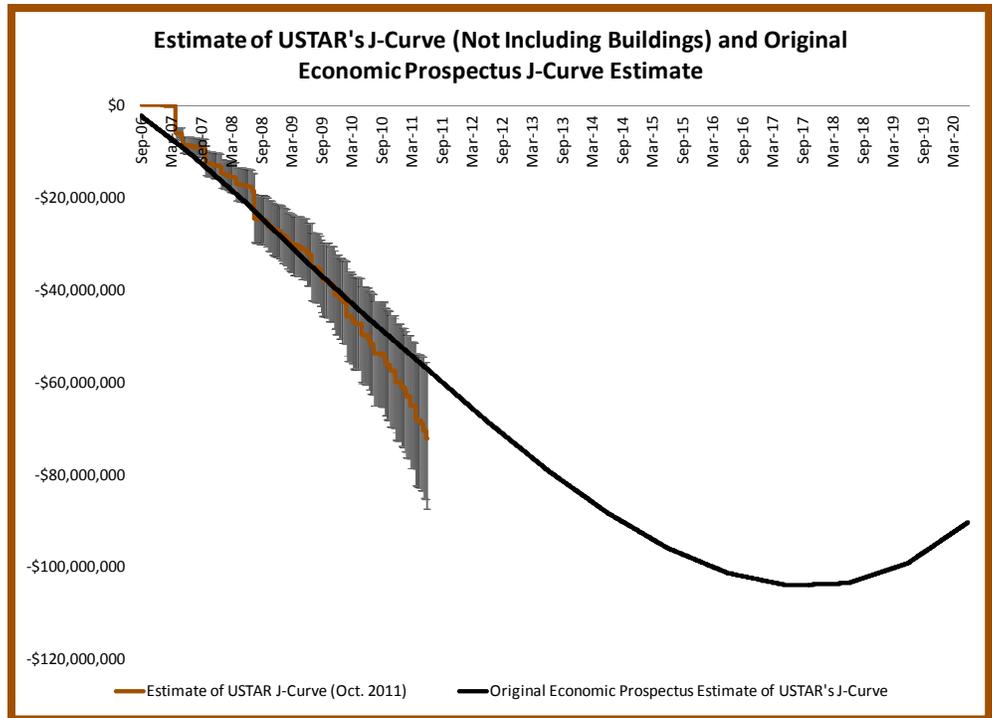
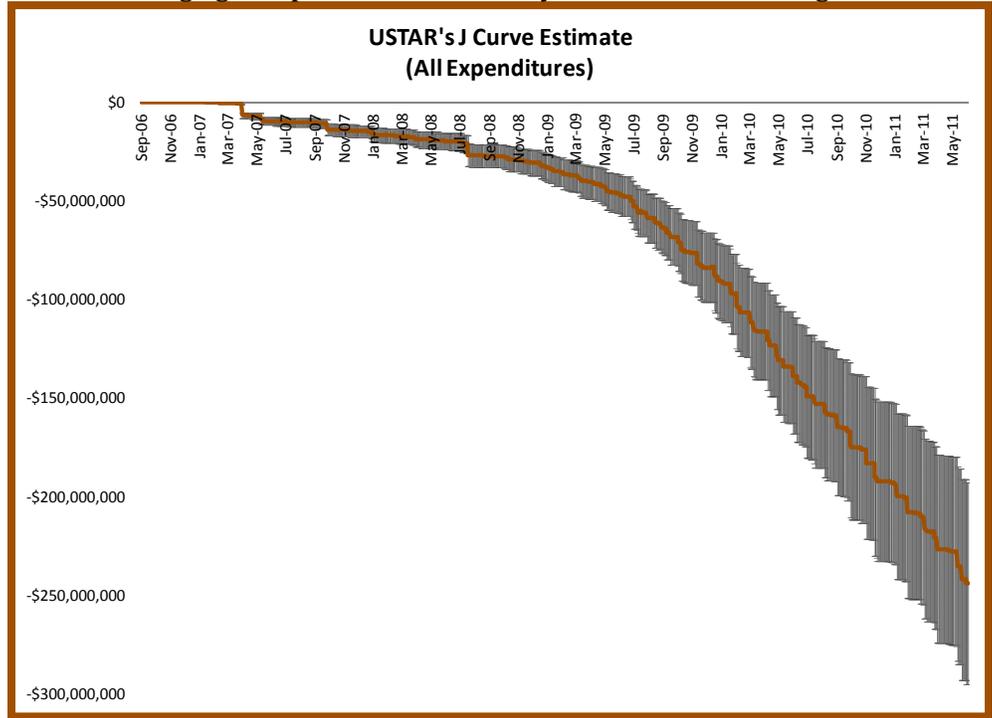


ESTIMATED J-CURVE, STRUCTURAL DEFICIT AND NONLAPSING BALANCE (FY07 – FY11)

Business type investments often follow what analyst’s call a “J Curve.” It is called such because start-up expenditures generally show as a loss on a company’s balance sheet. This creates a downward return trend in the first few years of operation. If things go as planned, eventually revenue should begin to offset expenditures, flattening the curve, until returns on initial investment create a longer-term positive trend line. Graphed together, the net revenue – hopefully – resembles a “J” over time.

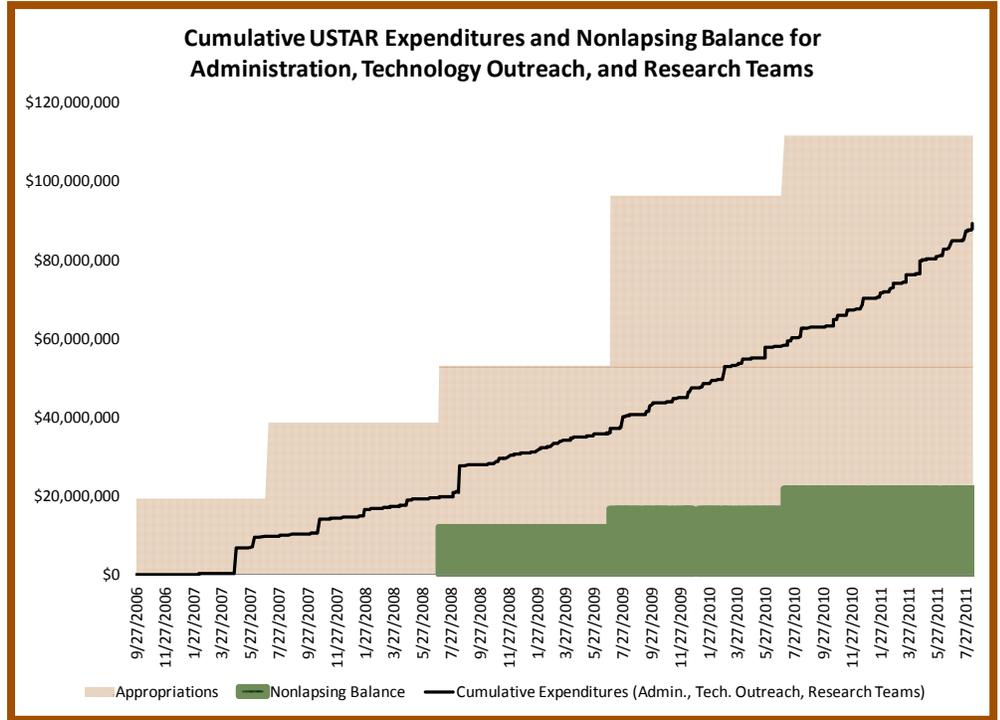
Akin to many business-type investments, initial years of USTAR program expenditures are a net negative profit. The gains to the state in this rough analysis take the form of taxes on activities of the USTAR professors, researchers, analysts, and administrators. To estimate taxes generated from USTAR activities, the Analyst applied multipliers against federal and state expenditures. The results indicate that the \$284 million in expenditures from FY 2007 to FY 2011 have generated about \$39 million in tax revenue, leaving a net loss of about \$245 million.

When making an apples-to-apples comparison by excluding the multiplier effects and costs of the two USTAR buildings, USTAR is running about on target, with the point estimate being \$15 million below the initial economic prospectus. The results through FY 2011 are within the margin of error of the original economic prospectus. USTAR’s initial economic prospectus, which excluded the costs and revenue from construction of the two USTAR buildings, indicated that the USTAR program would be profitable by FY 2018 and turn an overall profit by around FY 2025.



STRUCTURAL DEFICIT AND NONLAPSING BALANCES

Due to one-time federal and General Fund spending, USTAR expenditures continued to grow through the past few years. USTAR is facing a \$4.6 million funding cliff in FY 2013 if they continue on the current projected spending pattern. In 2012, USTAR plans to spend \$30.4 million, which is \$16.5 million more than their \$14.0 million ongoing General Fund appropriation. To spend \$30.4 million, USTAR plans to draw down their \$21.7 million in nonlapsing balance. In FY 2013, USTAR projects to spend \$23.8 million, which is \$4.6 million more than \$19.2 million they current project will have allocated to them (\$14.0 million General Fund and \$5.2 million nonlapsing balances).



CUMULATIVE EXPENDITURES THROUGH FY 2011 BY UNIVERSITY, BY PROGRAM, AND BY TYPE.

Initial year expenditures amounted to \$11.1 million. Since FY 2007, expenditures have grown to \$112.6 million in FY 2011. About 80% of the expenditures in FY 2011 were for construction of the University of Utah and Utah State USTAR buildings. The ongoing programs (Administration, Technology Outreach, and Research Teams) have seen expenditures grow from \$10.0 million in FY 2007 to \$26.7 million in FY 2011, with about 86.5% of the FY 2011 expenditures being made for researcher expenses (see figure on page 1).

| USTAR Sources and Uses of Funding | | | | | | |
|--------------------------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|
| | Actual FY 2007 | Actual FY 2008 | Actual FY 2009 | Actual FY 2010 | Actual FY 2011 | Authorized FY 2012 |
| Sources of Funding | | | | | | |
| General Fund ongoing | \$19,250,000 | \$19,324,500 | \$16,397,800 | \$15,296,100 | \$14,501,300 | \$13,952,700 |
| General Fund one-time | | | -\$1,947,700 | -\$5,072,900 | | |
| Federal Funds (\$33 million total) | | | | \$15,884,351 | \$17,115,649 | |
| SBIR fees | | | \$6,315 | \$9,600 | \$4,750 | \$5,000 |
| Beginning Balance | | \$9,286,195 | \$11,269,697 | \$12,164,979 | \$16,744,864 | \$21,702,000 |
| Ending Balance | -\$9,286,195 | -\$11,269,702 | -\$12,164,979 | -\$16,744,864 | -\$21,701,984 | -\$5,215,600 |
| Total Sources | \$9,963,805 | \$17,340,993 | \$13,561,133 | \$21,537,266 | \$26,664,579 | \$30,444,100 |
| Uses of Funding | | | | | | |
| Outreach and Administration (includes TCG) | \$672,157 | \$3,056,114 | \$3,507,632 | \$2,901,017 | \$3,595,832 | \$3,255,500 |
| University of Utah TCG | | | | \$247,847 | \$978,204 | \$158,900 |
| Utah State University TCG | | | | \$158,876 | \$420,506 | \$35,600 |
| University of Utah Research Teams | \$128,047 | \$8,819,190 | \$11,992,963 | \$12,159,312 | \$12,730,038 | \$16,558,100 |
| Utah State University Research Teams | \$2,136,552 | \$4,651,186 | \$5,619,733 | \$6,352,571 | \$8,939,999 | \$10,436,000 |
| U of U and USU Advance Payments | \$7,027,049 | \$814,503 | -\$7,559,195 | -\$282,357 | | |
| Total Uses | \$9,963,805 | \$17,340,993 | \$13,561,133 | \$21,537,266 | \$26,664,579 | \$30,444,100 |

University of Utah

The University of Utah expends funds for research in biomedical device innovation, circuits of the brain, fossil energy, imaging technology, nanotechnology biosensors, personalized medicine, nanoscale and biomedical photonics, digital media, micro and nano system integration, cell therapy, wireless nanosystems, diagnostic imaging, and alternative energy. To date, the largest areas of expenditure are for startup space and other expenses (\$10.5 million), nanotechnology biosensors (\$5.4 million), wireless nanosystems (\$5.0 million), circuits of the brain (\$4.0 million), and micro and nano system integration (\$3.8 million). Comparing all areas, the largest portion of spending is on equipment (39%), salaries (35%), and current expenses (24%).

| University of Utah USTAR Research Teams Expenditures | | | | | | |
|------------------------------------------------------|------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| Research Area | 2007 | 2008 | 2009 | 2010 | 2011 | Total |
| Startup Space/Rent/Joint Venture/Other | | \$4,390,805 | \$1,852,452 | \$1,685,008 | \$2,579,166 | \$10,507,431 |
| Nanotechnology Biosensors | | \$1,874,107 | \$1,701,550 | \$1,356,388 | \$478,971 | \$5,411,016 |
| Wireless Nanosystems | \$3,741 | \$355,246 | \$2,080,115 | \$1,638,218 | \$958,126 | \$5,035,447 |
| Circuits of the Brain | \$16,687 | \$103,060 | \$1,088,168 | \$2,017,104 | \$776,698 | \$4,001,717 |
| Micro Nano System Integration | | | \$79,913 | \$1,730,896 | \$1,961,128 | \$3,771,937 |
| Biomedical Device | | \$1,103,457 | \$665,063 | \$840,758 | \$927,586 | \$3,536,864 |
| Diagnostic Imaging | \$19,632 | \$24,427 | \$1,526,309 | \$780,153 | \$878,532 | \$3,229,052 |
| Fossil Energy | \$43,478 | \$630,228 | \$1,625,280 | \$329,265 | \$537,628 | \$3,165,879 |
| Imaging Technology | \$44,510 | \$335,681 | \$1,336,452 | \$620,294 | \$754,425 | \$3,091,361 |
| Nanoscale and Biomedical Photonic | | | \$17,202 | \$923,484 | \$2,063,155 | \$3,003,841 |
| Digital Media | | | \$14,023 | \$213,014 | \$278,863 | \$505,899 |
| Bio Lab | | | | | \$500,000 | \$500,000 |
| Alternative Energy Center | | | | \$7,591 | \$30,575 | \$38,165 |
| Personalized Medicine | | \$2,179 | \$4,362 | \$12,969 | \$4,387 | \$23,898 |
| Cell Therapy | | | \$2,073 | \$4,171 | \$799 | \$7,044 |
| Total | \$128,047 | \$8,819,190 | \$11,992,963 | \$12,159,312 | \$12,730,039 | \$45,829,551 |

| University of Utah USTAR Research Teams Expenditures by Area of Expenditure | | | | | | |
|-----------------------------------------------------------------------------|---------------------|------------------|---------------------|---------------------|--------------------|---------------------|
| Research Area | Salary & Benefits | Travel | Current Expense | Equipment | Capital Outlay | Total |
| Startup Space/Rent/Joint Venture/Other | \$6,207 | \$1,993 | \$5,449,343 | \$0 | \$5,049,888 | \$10,507,431 |
| Nanotechnology Biosensors | \$2,795,940 | \$104,919 | \$580,194 | \$1,929,963 | | \$5,411,016 |
| Wireless Nanosystems | \$2,556,805 | \$127,903 | \$513,753 | \$1,233,735 | \$603,250 | \$5,035,447 |
| Circuits of the Brain | \$1,841,044 | \$36,484 | \$771,182 | \$1,353,007 | \$0 | \$4,001,717 |
| Micro Nano System Integration | \$964,244 | \$62,094 | \$560,882 | \$1,157,850 | \$1,026,868 | \$3,771,937 |
| Biomedical Device | \$1,774,082 | \$82,172 | \$763,829 | \$730,436 | \$186,345 | \$3,536,864 |
| Diagnostic Imaging | \$1,640,768 | \$252,405 | \$735,368 | \$597,510 | \$3,000 | \$3,229,052 |
| Fossil Energy | \$1,430,302 | \$56,573 | \$217,073 | \$1,400,268 | \$61,664 | \$3,165,879 |
| Imaging Technology | \$1,966,285 | \$70,446 | \$315,582 | \$739,048 | | \$3,091,361 |
| Nanoscale and Biomedical Photonic | \$749,506 | \$42,433 | \$615,987 | \$1,182,966 | \$412,950 | \$3,003,841 |
| Digital Media | \$353,617 | \$40,542 | \$111,740 | | | \$505,899 |
| Bio Lab | | | | \$250,000 | \$250,000 | \$500,000 |
| Alternative Energy Center | | \$5,326 | \$9,092 | \$23,748 | | \$38,165 |
| Personalized Medicine | | \$18,429 | \$5,469 | | | \$23,898 |
| Cell Therapy | | \$3,151 | \$3,892 | | | \$7,044 |
| Total | \$16,078,800 | \$904,869 | \$10,653,386 | \$10,598,532 | \$7,593,965 | \$45,829,551 |

Utah State

Utah State expends funds for research in the areas of advanced nutrition, biofuels, directed sensors, plasma containment, synthetic biomanufacturing, space weather, interactive design, instructional media, veterinary diagnostics, infectious disease, energy, and intuitive lighting. To date, the largest areas of expenditure are in the research areas of active sensing and imaging (\$7.3 million), applied nutrition research (\$5.5 million), biofuels (\$4.9 million), synthetic biomanufacturing (\$3.0 million), and intuitive

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buildings (\$1.4 million). Comparing all areas of expenditure, most is for current expenses (41%), salaries (36%), and equipment (15%).

| Utah State University USTAR Research Teams Expenditures | | | | | | |
|----------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Research Area | 2007 | 2008 | 2009 | 2010 | 2011 | Total |
| Center for Active Sensing and Imaging (CASI) | \$949,552 | \$1,847,834 | \$1,868,696 | \$1,241,818 | \$1,389,282 | \$7,297,181 |
| Applied Nutrition Research (formerly CAN) | \$555,122 | \$1,305,826 | \$1,640,640 | \$1,086,800 | \$939,997 | \$5,528,385 |
| Biofuels | \$348,687 | \$1,278,942 | \$1,004,129 | \$1,588,036 | \$658,982 | \$4,878,777 |
| Synthetic Bio-Manufacturing Center (SBC) | | | \$486,898 | \$592,311 | \$1,963,410 | \$3,042,619 |
| Intuitive Buildings (I2B) | | | | \$456,899 | \$934,661 | \$1,391,560 |
| Space Weather | | | \$81,203 | \$474,371 | \$800,427 | \$1,356,001 |
| Building O&M | | \$195,322 | \$204,682 | \$200,275 | \$558,367 | \$1,158,645 |
| STORM | | | | | \$974,615 | \$974,615 |
| Energy Dynamics Lab (EDL) | | | | \$393,754 | \$105,327 | \$499,081 |
| Plasma Containment | | | \$333,485 | \$124,475 | \$0 | \$457,960 |
| Instructional Tech/Media (IDIAS) | | | | \$192,223 | \$112,916 | \$305,140 |
| Semiconductor Chips (Krishna Shenai) | \$281,281 | \$23,187 | | | | \$304,469 |
| Commercialization Program | | | | | \$216,235 | \$216,235 |
| Energy Initiative | | | | | \$142,175 | \$142,175 |
| Veterinary Diag/Infectious Disease (VDID) | | | | \$1,608 | \$84,473 | \$86,081 |
| Joint Venture | | | | | \$59,132 | \$59,132 |
| Programming | \$1,911 | \$74 | | | | \$1,985 |
| Total | \$2,136,552 | \$4,651,186 | \$5,619,733 | \$6,352,571 | \$8,939,999 | \$27,700,040 |

| Utah State University USTAR Research Teams Expenditures by Area of Expenditure | | | | | | | |
|---------------------------------------------------------------------------------------|---------------------|------------------|--------------------|--------------------|--------------------|------------------|---------------------|
| Research Area | Salary & Benefits | Travel | Current Expense | Equipment | USURF I.O.T. | Capital Outlay | Grand Total |
| Center for Active Sensing and Imaging (CASI) | \$1,420,179 | \$72,273 | \$495,782 | \$1,269,544 | \$4,039,403 | | \$7,297,181 |
| Applied Nutrition Research (formerly CAN) | \$3,696,194 | \$90,461 | \$1,365,363 | \$376,368 | | | \$5,528,385 |
| Biofuels | \$1,889,253 | \$127,011 | \$968,887 | \$346,318 | \$805,654 | \$741,654 | \$4,878,777 |
| Synthetic Bio-Manufacturing Center (SBC) | \$1,043,385 | \$54,520 | \$569,818 | \$1,374,895 | | | \$3,042,619 |
| Intuitive Buildings (I2B) | \$37,970 | \$1,571 | \$16,219 | | \$1,335,800 | | \$1,391,560 |
| Space Weather | \$951,660 | \$53,589 | \$224,665 | \$126,087 | | | \$1,356,001 |
| Building O&M | | | \$1,158,645 | | | | \$1,158,645 |
| STORM | | | \$974,615 | | | | \$974,615 |
| Energy Dynamics Lab (EDL) | | | | | \$499,081 | | \$499,081 |
| Plasma Containment | \$390,394 | \$4,218 | \$63,348 | | | | \$457,960 |
| Instructional Tech/Media (IDIAS) | \$261,692 | \$3,311 | \$40,137 | | | | \$305,140 |
| Semiconductor Chips | \$266,621 | \$17,514 | \$20,334 | | | | \$304,469 |
| Commercialization Program | \$10,809 | | \$9,099 | | \$196,327 | | \$216,235 |
| Energy Initiative | \$2,500 | \$1,454 | \$58,508 | | \$79,713 | | \$142,175 |
| Veterinary Diag/Infectious Disease (VDID) | \$34,633 | \$19,189 | \$23,062 | \$9,196 | | | \$86,081 |
| Joint Venture | | \$426 | \$11,706 | \$47,000 | | | \$59,132 |
| Programming | | \$1,695 | \$290 | | | | \$1,985 |
| Grand Total | \$10,005,289 | \$447,232 | \$6,000,478 | \$3,549,408 | \$6,955,978 | \$741,654 | \$27,700,040 |

PERFORMANCE

As a facilitator of job creation and economic growth, USTAR considers as indicators of its success external research grants awarded to university USTAR professors, companies started or brought to Utah through the universities' USTAR professors, researchers hired, grant proposals assisted, new companies started or assisted through the Technology Outreach program, media stories mentioning USTAR, contacts made and followed in Salesforce.com, and the number of website hits.

| Performance of Administration | | | |
|--------------------------------|---------|---------|---------|
| | FY 2009 | FY 2010 | FY 2011 |
| Website hits | 3,300 | 4,612 | 5,376 |
| Accounts in Salesforce.com | 2,137 | 2,622 | 2,812 |
| Media stories mentioning USTAR | 35 | 72 | 130 |

| Performance of Technology Outreach | | | |
|---------------------------------------------------------|----------------|----------------|----------------|
| | FY 2009 | FY 2010 | FY 2011 |
| New companies launched (with Tech Outreach assistance) | 6 | 0 | 15 |
| Federal grants won by Utah Companies (assisted by SBIR) | \$1,000,000 | \$280,000 | \$1,897,890 |
| Private equity investment (assisted by Tech Outreach) | \$5.68 million | \$2.06 million | \$7.63 million |

| Performance of Research Teams | | | |
|-----------------------------------|--------------|--------------|--------------|
| | FY 2009 | FY 2010 | FY 2011 |
| Researchers hired and in place | 28 | 36 | 44 |
| External research grants awarded | \$16,501,459 | \$20,628,343 | \$28,476,734 |
| Disclosures Submitted | 42 | 34 | 35 |
| Patents Filed | 7 | 24 | 39 |
| Companies started/brought to Utah | 3 | 1 | 0 |

PERFORMANCE DIFFERENTIAL BETWEEN UNIVERSITY OF UTAH AND UTAH STATE UNIVERSITY

Primary indicators of USTAR professors' success are companies started or brought to Utah and external research grants awarded. To date, the University of Utah (U of U) and Utah State University (USU) USTAR researchers have started four new companies or brought them to Utah. The companies are in the fields of Earth and Space Innovations (USU), Energy Technology (U of U), BioDevice and BioPharma (U of U), and Nanotechnology (U of U).

The Federal Grants Comparison table summarizes success in terms of federal grants received per dollar of expenditure. To date, the U of U has received or anticipates receiving 165% (\$1.65 on the dollar) of State expenditure, whereas USU has received or anticipates receiving 75% (\$0.75 on the dollar) of State expenditure. When looking at this measure, the U of U is outperforming USU by a margin of about 2 to 1. Instead of funding on a 60/40 mix, the Legislature may wish to fund the universities based upon performance.

| U of U and USU Federal Grants Comparison (FGC) | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------|----------------------|
| | U of U | USU | |
| (1) Total Operating Expenses | \$45,829,551 | \$27,700,041 | |
| (2) Operating Expenses As a percent of total | 62% | 37.67% | |
| | | Secondary Impact | w/o secondary Impact |
| (3) Total Awarded & Anticipated Grants (see note 1) | \$75,795,744 | \$20,640,640 | \$14,450,500 |
| (4) (Grants Awarded + Anticipated Awards)/Op. Exp. | 165% | 75% | 52% |
| (5) Ratio Comparisons | 1.65 | 0.75 | 0.52 |
| (6) U of U to USU | | 2.2 | 3.2 |
| (7) USU as % of U of U | | 45% | 32% |
| (8) Number of Researchers (see note 2) | 32 | 18 | 12 |
| (9) Dollars per Researcher | \$2,368,617 | \$1,146,702 | \$1,204,208 |
| (10) Current Proposals Pending | \$81,493,665 | n/a | \$10,367,559 |
| (11) Current Proposals per Researcher | \$2,546,677 | n/a | \$863,963 |
| Notes | | | |
| 1) Numbers reflect figures provided by USTAR. They have not been independently verified. Secondary impact consists of two categories. The first is the Uintah Impact Mitigation Special Services District Funds (UIMSSD). The UIMSSD receives funding through mineral lease funds allocated to the counties. The second is researchers and team leads that are not USTAR hires, but are working on USTAR funded projects and obtaining Federal grants on behalf of their respective projects. | | | |
| 2) Five non-USTAR researchers have contributed to USTAR projects and are reflected in the total number. UIMSSD is added as a "researcher" to reflect its monetary contribution. | | | |

CONCLUSION

With one-time federal funding running out at the close of FY2012, USTAR may begin to feel the impacts of its structural deficit in FY2013. The Legislature and USTAR were aware of the one-time funding issue when ARRA appropriations were made to USTAR. Additional funding may be needed if the Legislature intended the one-time funding to be ongoing. Currently, USTAR funding is allocated on a 60/40 split between the U of U and USU. The Legislature may wish to increase return to the State by funding the research universities based upon performance.