LOGAN - CACHE AIRPORT AUTHORITY BOARD MEETING
APRIL 5, 2017
MINUTES

The Logan-Cache Airport Authority Board convened in a regular session on April 5, 2017 at 7:30 a.m. in the Cache County Historic Courthouse, County Council Chambers, 199 North Main, Logan, Utah.

ATTENDANCE

Members of the Airport Authority Board in Attendance:
John Kerr – Chairman
Craig W Buttars – Cache County Executive
Jeannie F. Simmonds – Logan City Council
Gar Walton
Bill Francis

Members of the Airport Authority Board Absent:
H. Craig Petersen – Logan City Mayor
Karl Ward – Cache County Council

Also in Attendance:
Kymber Housley – Logan City
Matt Bunnell – Utah State University
Aaron Dyches – Utah State University
Andreas Wesemann – Utah State University
David Christensen – Utah State University
Matt Swapp – State Aeronautics
Kim R. Hall – Leading Edge Aviation
Nate Gnehm – Mountain Ridge Helicopters
Brady Hansen – Logan Fire Department
Nathan Millecam – Electric Power Systems
Sandy Emile – Cache Chamber of Commerce
Janeen Allen

CALL TO ORDER

Chairman John Kerr called the meeting to order at 7:31 a.m.

ITEMS OF BUSINESS

Approval of Minutes – January 4, 2017

ACTION: Motion was made by Walton and seconded by Francis to approve the minutes of January 4, 2017 as written. The vote in favor

was unanimous, 5-0, with 2 absent

ITEMS FOR DISCUSSION

UAOA Report – Gar Walton
Walton said they attended very excellent meetings. They were able to meet with the Denver ADO to go over funding for the airport projects. It is a somewhat unique relationship our airport has with the FAA in that we meet every six months to review these projects. Other airports don't have an arrangement like this. Other topics covered at the conference included:

- Pat Morley of the Utah Division of Aeronautics announced his retirement at this conference. He has done a great job for Utah airports and will be missed.
- Presentation was given by the National Guard and the role they play with their fleet of helicopters in aiding with disasters.
- Salt Lake City International Airport highlighted due to the extensive reconstruction it is undergoing.
- Weather technology advancements for predicting weather, etc.
- Unmanned Aircraft Systems, particularly drones which are increasing in number and creating significant safety issues with airports
- Land Use and Community – better communication as to the economic impact an airport has on the surrounding communities

Financial Reserves: Committed and Uncommitted – Craig Buttars
Buttars said that as of December 31, 2016, the airport's total in the reserve fund was $455,474.00. Of that total, $175,133.00 is committed and $280,339.00 is uncommitted. The committed funds are for ongoing operational costs.

Taxilane India Proposal – Bill Francis
Francis said the engineer's estimate to build Taxiway India is about $125,000. It would allow access for Cache Valley Electric's two hangars and future access to that area. He expressed his appreciation to the owner of Cache Valley Electric, Jim Laub for his willingness to work with the airport in opening up this new area. The FAA will provided reimbursement of the $125,000 to build the taxilane. Buttars asked for clarification on what the project will entail. Kerr said the plan is for Cache Valley Electric to relocate their hangar to a position behind its current location which will open up access for more hangars in the future.

ACTION: Motion was made by Francis and seconded by Buttars to approve the funds for the construction of Taxiway India in anticipation of federal reimbursement. The vote in favor was unanimous, 5-0, with 2 absent

Site Request – Electric Power Systems – Nathan Millecam (Attachment A)
Millecam gave a Powerpoint presentation describing their company and outlining their request. The presentation is part of these minutes as "Attachment A."

Key points of the presentation included:

- Founders: Randy Dunn and Nate Millecam
- EP Systems is a new entity coming out of a 45-year-old Aerospace Company
- $5-10M per year in revenue with 25% being battery revenue
- No debt, fully depreciated assets
- Looking to expand to another location from East Los Angeles
- Development of lithium-ion batteries for aerospace that function safely in extreme conditions and are cost-efficient to produce and safer than the commercial applications in the market
- Use of an open source battery management system which works with any chemistry
- Work with third-party manufacturers
- Cache Valley Project: NASA X57 – Production of a low-cost, highly efficient, ultra-light battery to work in urban aircraft
- Army Soldier Power Battery (in development & test)
- Joint development with Honeywell for aircraft lithium-ion batteries that never have to be removed or replaced
- Logan to be the corporate headquarters for this product line
- Economic impact anticipated to produce 144 new high-paying jobs including manufacturing, administrative, engineering and professional with an annual payroll of $9.6M
- Utah State University with its Aerospace program one of the main attractions bringing them to Utah and working closely with the university on procuring grants and awards
- Potential of positioning the State of Utah as an innovation hub for the electrification of aircraft
- Facility will be 15,000 sq. ft. manufactured out of pre-fabricated steel
- Will hire a local contractor to assemble and do the interior work
- $5M in development dollar potential to Cache Valley in 3 months of engagement

Buttars asked if the company will also require hangar space for aircraft coming into the valley. Millecam said they will and will look into leasing the space they will require. Kerr noted the request for lease space, which is part of these minutes as “Attachment B,” indicates an area about 2 acres in size located in the grassy area south of the modulars and west of the gravel parking lot. Millecam said they have a rough site plan drawn up of the location and positioning of the facility with its parking lot but will be presenting a formal site plan in the near future to Logan City. Kerr also noted that the company has requested a 30-year lease at a base rate for non-flight line hangars.

ACTION: Motion was made by Buttars and seconded by Walton and Francis to approve the request from Electric Power Systems. The vote in favor was unanimous, 5-0, with 2 absent

Summer Projects: North Ramp, Taxiway Charlie – Bill Francis

Kerr said there is an extensive construction project committed to be funded by the FAA which will run concurrently with the Taxiway India project. Francis explained that the project is improvements to Taxiway Charlie. He noted that the FAA said they will not do any asphalt within 40 feet of a hangar. This affects the strip that goes along the hangars mostly owned by

USU. However, the asphalt in the area is fairly new and Francis doesn't anticipate there being a problem with it. It is projected to cost around $1.5M and will widen Taxiway Charlie and will create more tie down areas for USU. Kerr referred to the proposal which will increase the number of tie downs. After review, the consulting engineer and the FAA determined there was no need for a taxilane between the hangars and the tie downs.

Kerr anticipates a pre-bid meeting in early May with stakeholders. Bid opening should be the end of May with construction to begin mid-June. It should last approximately 90 days with anticipated completion in September.

Matt Bunnell from USU asked about the 5K run they are sponsoring in August. Kerr said it will have to be rerouted because of the construction.

Dyches reported that there are 125 students enrolled in the USU private pilot program. They are looking to increase the number of aircraft they have which means they will also be looking for more hangar space.

Committee Reports

Audit & Finance – Craig Buttars
No Report

Operations Committee – Kim Hall
Hall reported the construction is going well on Juliet and the cones have been working to keep workers out of restricted areas. He said the communication has been much better than previous construction projects.

Capital Improvements - Bill Francis
No Report

Economic Development / Public Relations – Gar Walton
No Report

Open Items
Dyches said there is not a bus stop at the airport because there is no place to make a U-turn, and the loop around is too narrow. Kerr suggested looking at possible solutions to getting a bus stop at the airport. Simmonds said she sits on the Cache Valley Transit board and volunteered to discuss with them what would be needed in order to get a stop there. It was noted that the battery company coming might provide an opportunity to create a loop or turnaround.

Kerr said an issue has come up with the airport fencing surrounding the Taxiway India project. The access gate coming off airport road will have to be relocated behind the hangars on Alpha Taxilane.

Next Meeting
May 3, 2017 at 7:30 a.m.

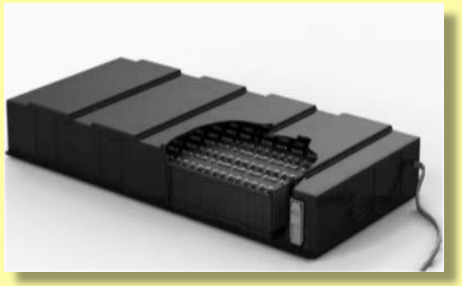
Adjournment
The meeting adjourned at 8:15 a.m.

LOGAN – CACHE AIRPORT AUTHORITY BOARD
APRIL 5, 2017

ATTACHMENT A

EP Systems Facility overview

April 29, 2017



ELECTRIC POWER SYSTEMS

Who are We?

Founder - Randy Dunn – VP Engineering

- Electrical Engineer at McDonnell Douglas
- Engineering Manager @ Maxis
- Dominant Shareholder/VP Engineering @ Phillips Aerospace
- Founder of Evaira Corp an Electric Vehicle Company (Acquired by IRF)
- Sr. Director of Advanced Engineering IRF & Infineon

Founder – Nate Millecam - CEO

- Management Consultant (e-commerce)
- Honeywell Leadership Development
  - Contracts Manager
  - Program Manager 787 Li-Ion Battery
- Product line GM for Honeywell ($200M portfolio)
- Director of Strategy & M&A for IRF & Infineon

Our Company's Roots

- EP Systems is new entity spun out of a 45 year old Aerospace Company
- Plant is located in the City of Industry California
- $5-10M p/yr Revenue, 25% is Battery revenue
- 30 -40 Employees
- About 36,000 Square Feet of Manufacturing
- AS9100, ISO9001 Certified
- Legacy Product lines include: Avionic Data Acquisition systems, Test Systems, Design Services, Machine & Welding for Military Applications
- $0 Debt, fully depreciated assets

Key People

- **Strategic Advisors & Board of Directors**
  - Former CEO of Quallion (Aerospace Li-Ion Manufacturer)
  - Partner at Kirton McKonkie (Global Law Firm)
  - Former Motorola Business Line CFO
  - Former Amkor officer and VPGM
  - University of Texas PhD in Pulsed Power & Energy
- **Engineering Talent**
  - 5 Core Engineers with over 100 years shared experience in Aero, 40 years combined experience in Li-Ion systems.

What Problems are we trying to Solve?

Safety

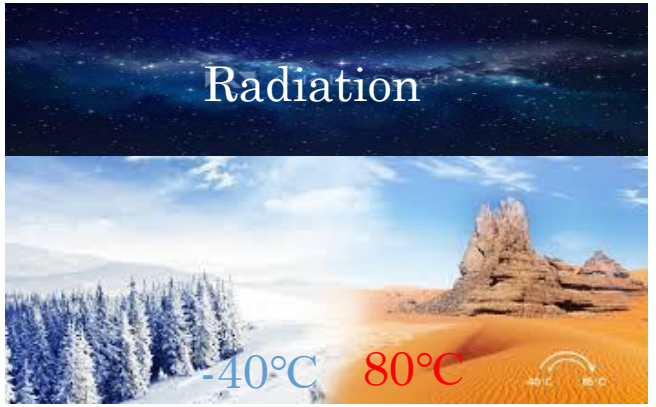
- Li-ion Batteries are intolerant to abuse
- Failure modes include; mismanaged charging/discharging, internal shorts, breakdown of layers
- Failure effects include; reduced life, cell venting, smoke, and fire.

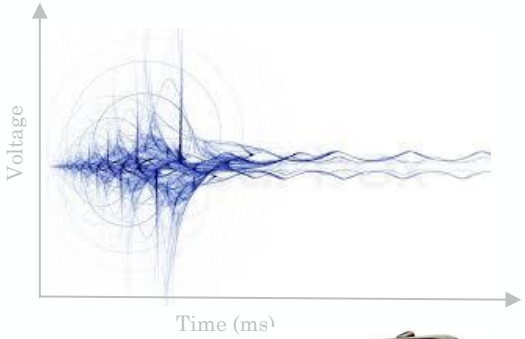
Acquisition Costs

-Li-Ion for Aerospace can be 10 -24times the costs
-Cost is driven by custom chemistries produced at low volumes in
-Cost is driven by doing a unique battery system for each program
-Cost is driven by a unique battery management system for each type of cell

Extreme Environments

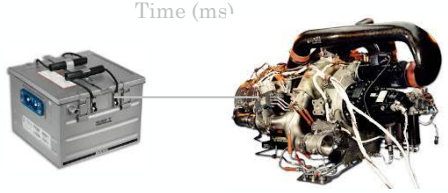
-Li-Ion doesn't work well in extreme Hot or cold
-High volume Commercial/Industrial cells don't work in Aerospace



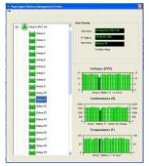


Drop in replacement Issues

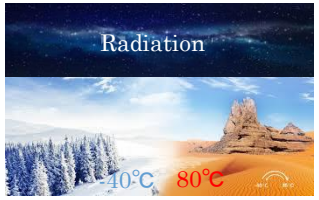
- Ni-Cad floats on the bus, meaning it can tolerate variability in voltage, amperage going in and coming out
  - Uncontrolled variability of Li-Ion in (V, I) causes thermal runaway
- To certify, a designer must prove its system can safely handle variability even in failed conditions. This is resolved through complex control schemes and power electronics which cell suppliers don't have expertise in



How do we solve them?

Problem	Technology Area	Our Unique IP	Quantifiable Benefit
	Software, Controls, & Connectivity   	• Dynamic Cell Balancing • Open Source BMS (works with any Chemistry) • Ability to test and diagnose remotely w/out removal • Big Data collection and analysis algorithms • DO311A Compliant	• A complex battery can last 25-100% longer depending on # of cells, and cell type • Batteries never have to come off for scheduled maintenance, we can predict failures • We can provide unique insights into how our customer use batteries, enabling optimized fleet logistics • EPS can certify BMS with FAA, NASA, EASA, and DOD

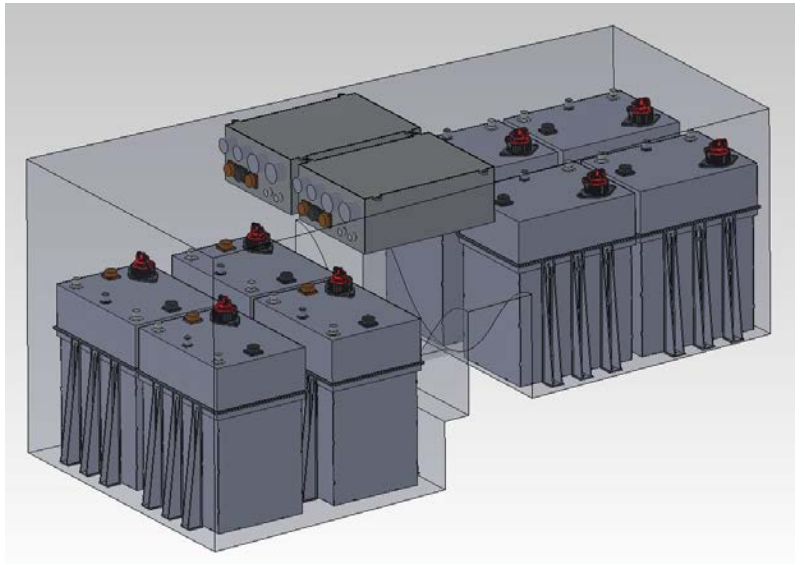
	Chemistry & Cells
	 
		• Sole access to 3rd Party cells with Special Materials
		  • Ceramic or Carbon Anodes
		• Highest NCA Power to Weight ratio cell in world
			• No internal shorts=No Thermal runaway
			• Tolerant to abuse=No Thermal runaway
			• 10X the life of any other Li-Ion cell
			• Cells with C Rates from 10C all the way up to 150C,
			  • Can do DEW with batteries
			  • Rapid charging=improved TAT

	Thermal Management & Packaging  	• Hybrid Cooling (Liquid & Air) • Proprietary Welding & Data Acquisition processes & Equipment	• Repeatable High C rates – key for DEW, Grid Stabilization, and Electric Flight • Reduced weight for cooling & containment approaches • Improved reliability and pack life • Key data captured for continued airworthiness

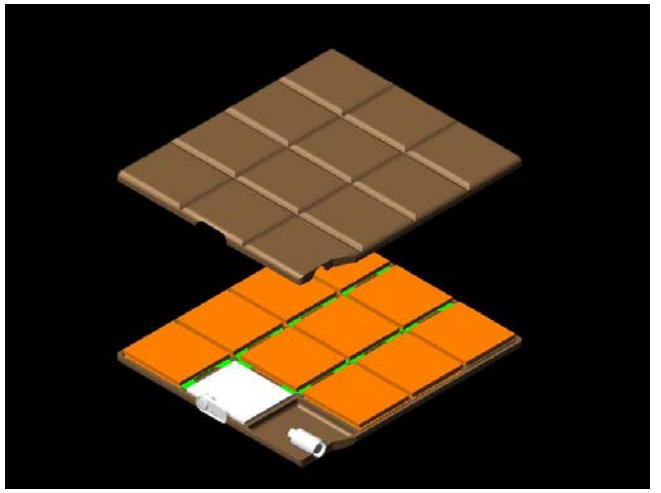
EPS's has an Ecosystem that enables us to develop, certify & produce Benchmark Custom Solutions at COTS prices

Relevant Projects (NASA X57)

- EPS was awarded the Traction Energy Storage System for a NASA X-Plane
- 460V nom 140AH System
- Rack Mounted 32S20P Modules
- Capable of 948.6 kW load
- COTS 18650 NCA Cells (Tesla Approach)
- Distributed BMS Architecture
  - Split Pack with individual control modules
  - Distributed Measurement and balancing
- Full Thermal Containment
- Compliant to DO160 & DO311
- 774lb system
- First flight in Q1 2017



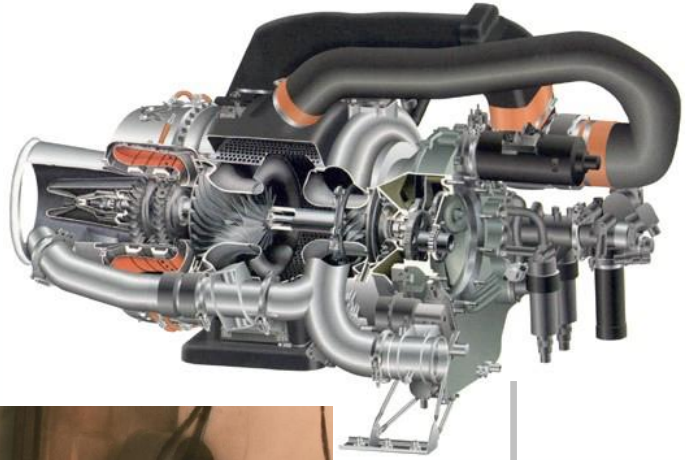
Army Soldier Power Battery (in development & test)

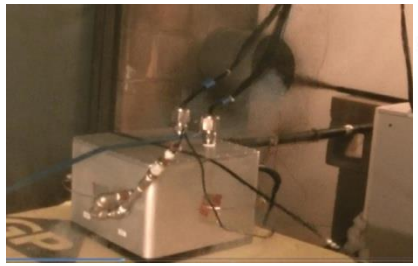


- Ruggedized Battery for United States Army (Vest & Helmet configurations)
- Operating temperature range: -20 to 50 deg C (-4 to 122 deg F)
- Battery configuration: 10s2p (Amprius - Silicon Nanowire cell)
- Nominal voltage: 28 V
- Pack capacity: 148Wh
- Cert Requirements: NAVSEA S9310 - MIL-STD-810
- Manufacturing Requirements: ITAR Controlled
- 10,000 Units per year

Honeywell APU Start Battery – Advanced technology Program

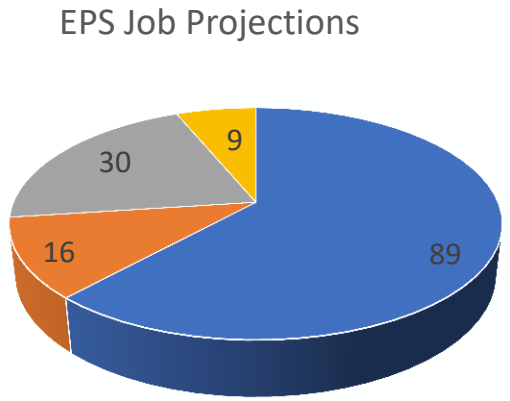
- Joint Development with Honeywell for Aircraft Main Battery applications
- Drop in replacement 28V 40AH Lithium Ion Auxiliary Power Unit engine starter Battery
- Lithium Titanate Oxide (LTO) Chemistry
- 11S 2P Configuration with fault tolerant redundancy
- Active Battery Management system Architecture
- 1200A pulse power
- 45lb weight
- 10,000 full DoD cycles
- Tested to Full DO311A destructive tests showing full containment
- Transitioning to Production in 2018



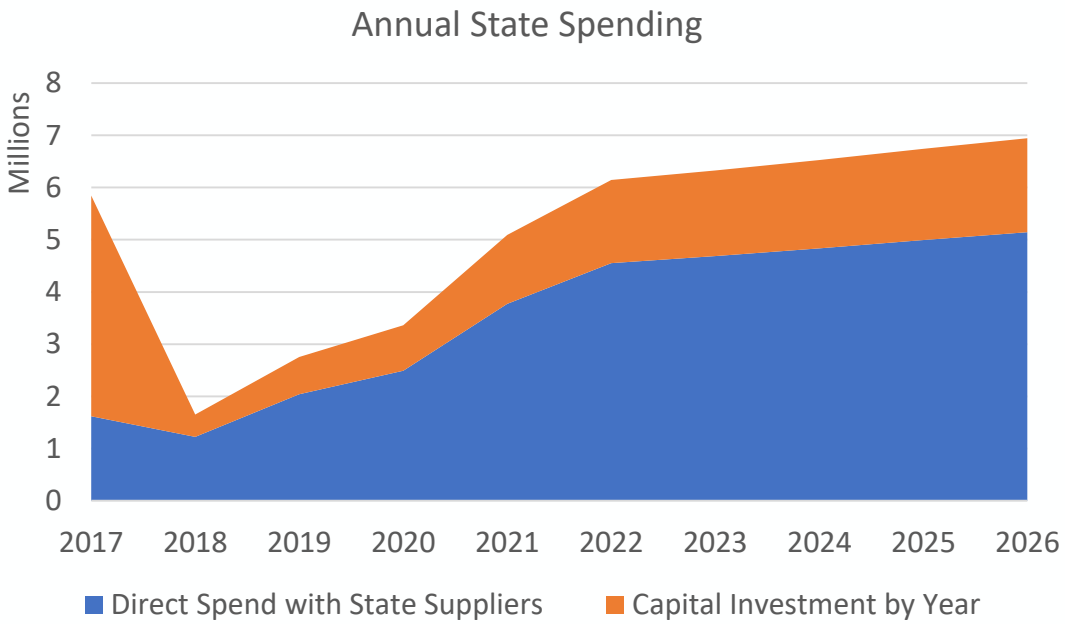


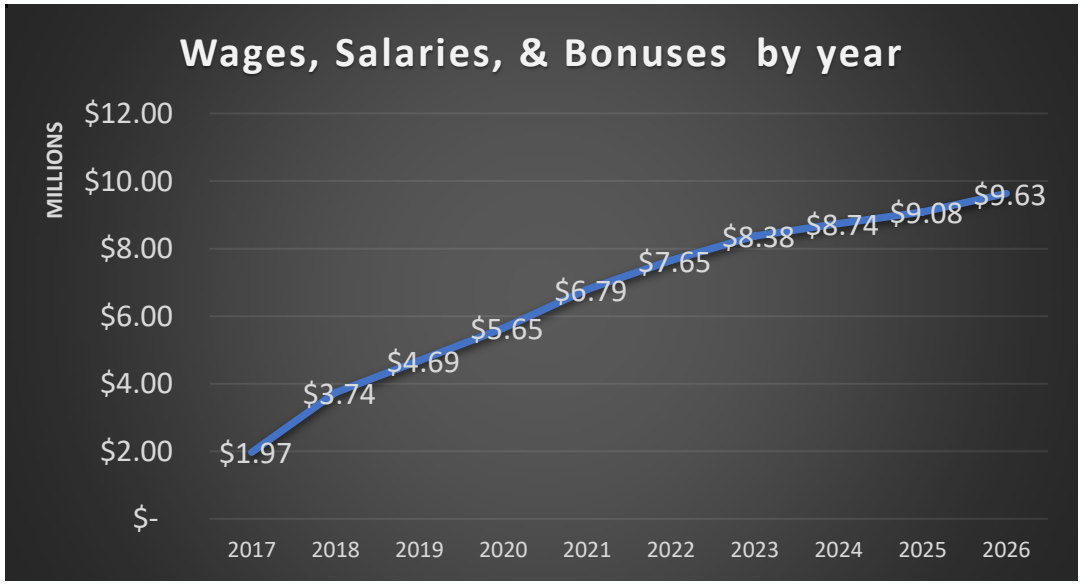
Economic Impact

- 144 new High paying jobs
- $9.6M in annual Payroll
- $7M a year in direct state spend
  - $2M p/year Capital Equipment
  - $5M p/year Direct Supplier spend
- Positions State as an innovation hub for Electrification of Aircraft



Job Type	Salary Range
Manufacturing Jobs	$30k - $45k
Administrative	$30k - $60k
Engineering	$85k - $170k
Professional	$60k - $280k





April 29, 2017

New facility overview

- 15,000 Sq/ft Facility located at Airport
  - 8k sq ft Manufacturing
  - 7k sq/ft Office and administrative
- Eco-Friendly Pre-fabricated Steel
  - Insulated Panels (Highly efficient)
  - No Harmful materials used in Processing of Materials
  - Earthquake, Hurricane, fire proof construction
- Modern Design from an award winning Architectural firm in Laguna Nigel.
- EPS would use a Cache Valley Contractor to assemble and do the interior work

The End

Summary of University Related engagements

- Zero Emissions Dual Series Hybrid All Electric Aircraft (AEA) Architecture Research Proposal with USU
  - NASA Glenn
  - $1M Research Grant to study next generation of Electric Propulsion Architectures for 4-90 passenger Aircraft
  - Utah State would do the Advanced research on management and control techniques
- Advanced Algorithm and Life Cycle Management Research Proposal with USU
  - NASA Armstrong
  - $1M Research Grants to Study advanced control and Management techniques to prolong the life of a large complicated Energy Storage System
  - USU does the cell Characterization
  - USU/EPS jointly develops the control and Management Algorithms
- DOE Grant on Advance Battery Converter Topologies
  - Department of Energy
  - $1.75M -$3M research grant to advanced Electric Power topologies that incorporate a novel DCDC converter topology with Battery Management System
  - USU does the Converter Topology
- USTAR Innovation Partnership Program
  - State of Utah Grant for joint Partnerships from Industry and University
  - Utah State would Receive $1.3M in funds to develop a World Class State of the Art Battery Thermal Management lab for certification of Large Batteries for Aerospace Applications
  - EPS would contribute $675k to the School in exchange for access to facility

$5M in development dollar potential to Cache Valley in 3 months of Engagement

LOGAN – CACHE AIRPORT AUTHORITY BOARD
APRIL 5, 2017

ATTACHMENT B

ELECTRIC POWER SYSTEMS

March 30, 2017
www.ep-sys.net

Mr. John Kerr
Chairman
Logan-Cache Airport Authority Board

Subject: Electric Power System Land Lease at Logan Cache County Airport

Dear Mr. Kerr,

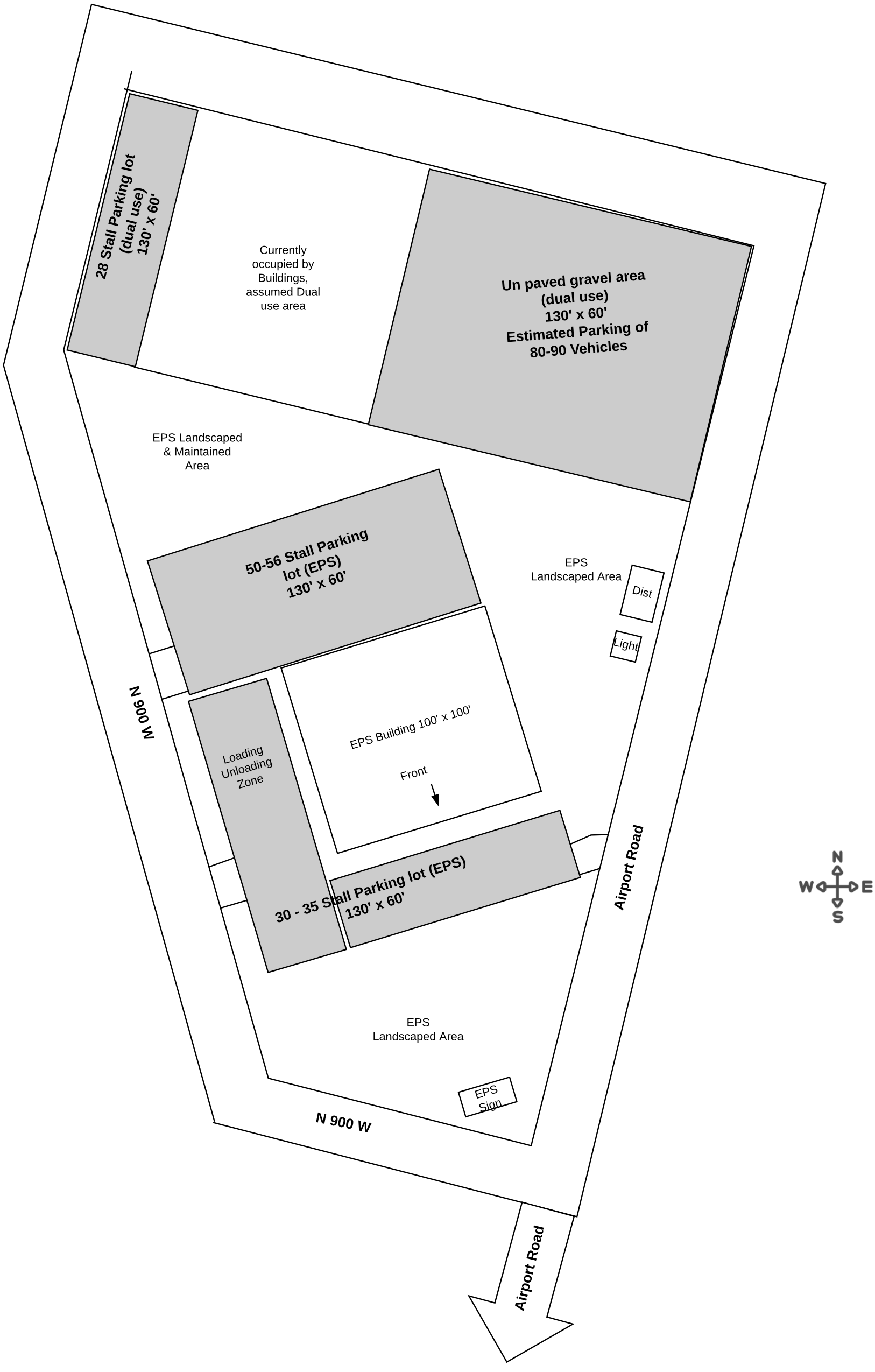
This letter is written to formally request Electric Power Systems (EPS) leasing of Airport Authority land, located at 2600 Airport Road, Logan UT 84321. EPS intends to build a 15,000 Square foot facility with a 10,000-square foot (100' x 100') footprint which includes; engineering labs, manufacturing space, and administrative space. EPS is an emerging leader in Aviation Power Systems for Hybrid Electric Aircraft.

The Aerospace industry is undergoing dynamic changes where combustion engines are being replaced with Hybrid and all electric power systems. Small Aircraft (1-9 passenger), and Unmanned Aerial Vehicles (UAV) are at the forefront of this change. EPS has been awarded multiple contracts by NASA to mature this technology on its premiere X57 Program. Follow on contracts from Industry are driving the need for a modern research, development, and manufacturing facility capable of designing, building, and certifying these Battery powered propulsion systems for flight. EPS also supplies many other types of Lithium Ion batteries for Military, Space, and Industrial applications that provide a level of safety, reliability, and cost, un-paralleled in Industry.

EPS is requesting a 30-year land lease on a total of 87,120 square feet of land. EPS is open to having a portion of the land designated as "dual use" to support other Airport Authority demands such as overflow parking for special occasions or weekends. EPS would desire a minimum of 80-91 of the lands estimated parking capacity of 200 spaces be allocated solely to EPS for its employees to fulfill shift work. Should the Airport Authority remove existing unoccupied structures, this could provide further "dual use" capacity. Additional details on our company, the project, and the proposed lease are provided in our attached PowerPoint presentation.

Best Regards,

Nathan Millecam
President & CEO


28 Stall Parking lot
(dual use)
130' x 60'
Currently
occupied by
Buildings,
assumed Dual
use area
Un paved gravel area
(dual use)
130' x 60'
Estimated Parking of
80-90 Vehicles
EPS Landscaped
& Maintained
Area
50-56 Stall Parking
lot (EPS)
130' x 60'
EPS
Landscaped Area
Dist
Light
N 900 W
Loading
Unloading
Zone
EPS Building 100' x 100'
Front
30 - 35 Stall Parking lot (EPS)
130' x 60'
Airport Road
N
W
E
S
EPS
Landscaped Area
EPS
Sign
N 900 W
Airport Road