Susan L.K. Lee Loy
Council Member
District 3

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Fax: (808) 965-8912
Email: sue.leeloy@hawaiicounty.gov

HAWAI'I COUNTY COUNCIL

25 Aupuni Street, Hilo, Hawai'i 96720

2019 SEP 20 PM 4:17

COUNTY CLERK
COUNTY COUNCIL

MEMORANDUM

DATE: September 20, 2019

TO: Aaron S.Y. Chung, Chairperson;
and Members of the Hawai'i County Council

FROM: SLLL for Susan L.K. Lee Loy, Council Member

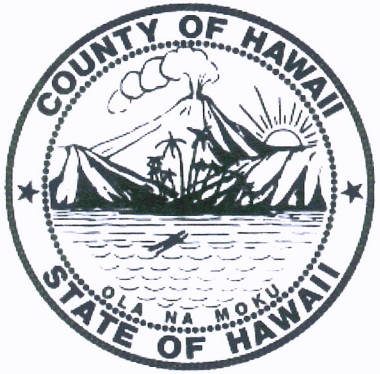
SUBJECT: Re: Communication No. 424 – Presentation regarding electric buses, energy sustainability, and disaster resiliency.

Attached for inclusion into the public record is a copy of the PowerPoint slides presented by Amply Power Inc. on September 17, 2019, as part of the presentation for Communication No. 424, in the Public Works and Mass Transit Committee.

SL:ps

Comm. No. 424.3
Ref. To: P/PWMTC
Ref. Date SEP 23 2019

Prepared for:



AMPLY

Fleet Charging Simplified

EV Charging as a Service For Fleets

Rob Kelly
V.P. Business Development
AMPLY Power, Inc.
www.amplypower.com
335 E. Middlefield Rd., Mountain View, CA 94043

August 2019

The Executive Team

Proven EV, Energy, and Enterprise Team

We Delivered

200MW+ Solar

350MWh+ Energy Storage

50,000+ Charging Spots
1100+ Fast Chargers

Mission Critical
99.99% Uptime

Investors

OBVIOUS VENTURES

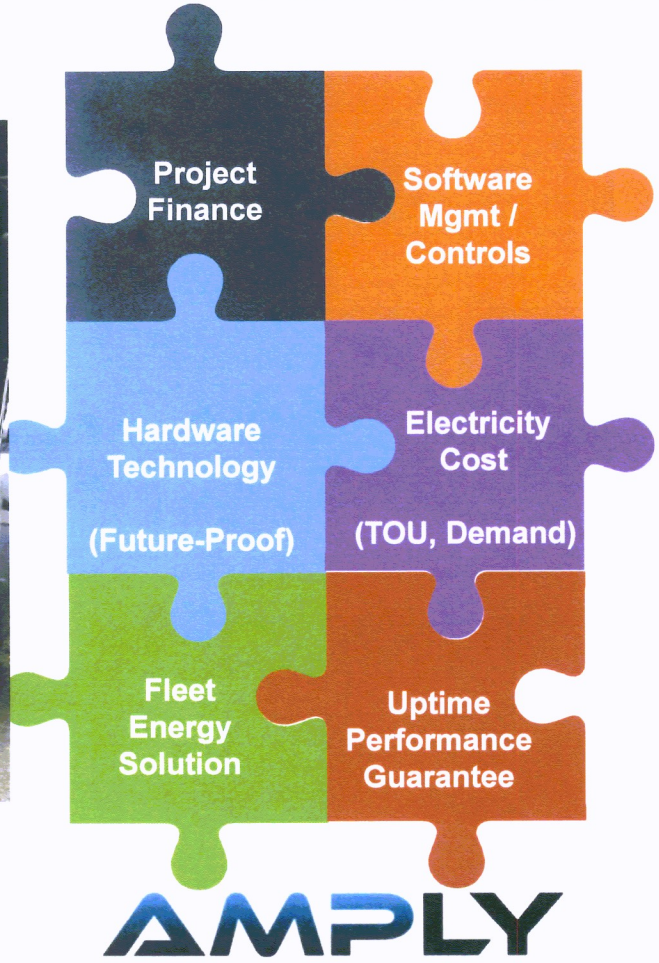
CONGRUENT VENTURES

EDISON INTERNATIONAL®

AMPLY
Fleet Charging Simplified

Turn-Key EV Charging, Usage Model

WHAT'S NEEDED: charge reliability, efficiency, budget for scaled adoption



GreenCharge

Solar PPA

aws

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Fleet Charging Simplified

The Cost of Unmanaged Charging

AMPLY white paper shows in ALL Top25 metro's EV Buses are cheaper than diesel

RTD'S 16TH STREET MALL BUSES

Electric costs more than diesel

By John Aguilar
The Denver Post

electric buses along the 16th Street Mall in downtown
r, pictured Monday, carried nearly 9.5 million passengers
ar. RJ Sangosti, The Denver Post

RTD pays nearly 60 percent more per mile to power its electric buses along Denver's 16th Street Mall as it does its conventional diesel fleet.

It's a price disparity that could slow the transit agency's embrace of zero-emission technology at a time when the state's new Democratic governor is pushing to put more electric cars on the road and air quality and climate change have become ever larger topics of conversation in Colorado.

"If we want to at some point roll out a larger fleet of electric vehicles, we have to address the high cost of electricity," said RTD spokeswoman Laurie Huff.

In a memo issued in late April to the Regional Transportation District's board of directors that was obtained by The Denver Post, RTD general manager Dave Gen-ova told the board that "average fuel cost" for the battery-powered MallRide shuttle buses is 73 cents per mile.

By contrast, the cost to fuel a "typical 40-foot transit coach" on RTD's system is 46 cents per mile.

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Purchasing Electricity as a "Fuel" Can be Complex to Navigate

- ✓ Buying electricity as fuel is completely different than procuring fossil fuels
- ✓ Different EV Chargers for different vehicles: standards and speeds vary
- ✓ Multiple styles: connector, wireless pad, over-head pantograph
- ✓ Variable electricity price and demand charge (can be 8¢ or 38¢/kWh)
- ✓ Charging can require a tremendous amount of power
- ✓ 3300 Utilities across USA

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Fleet Charging Simplified

Demand charges can increase fuel costs 3x and eliminate any savings

Pacific Gas and Electric Company
San Francisco, California
U 39

Revised Cal. P.U.C. Sheet No.
Cancelling Revised Cal. P.U.C. Sheet No.

ELECTRIC SCHEDULE E-19 Sheet 4
MEDIUM GENERAL DEMAND-METERED TOU SERVICE

3. Rates: (Cont'd.)

TOTAL RATES

	Secondary Voltage		Primary Voltage		Transmission Voltage	
Total Customer/Meter Charge Rates						
Customer Charge Mandatory E-19 ($ per meter per day)	$19.71253		$32.85421		$59.13758	
Customer Charge Voluntary E-19:						
Customer Charge with SmartMeter™ ($ per meter per day)	$4.59959		$4.59959		$4.59959	
Customer Charge without SmartMeter™						
Customer Charge Rate V ($ per meter per day)	$4.77700		$4.77700		$4.77700	
Customer Charge Rate W ($ per meter per day)	$4.63507		$4.63507		$4.63507	
Customer Charge Rate X ($ per meter per day)	$4.77700		$4.77700		$4.77700	
Optional Meter Data Access Charge ($ per meter per day)	$0.98563		$0.98563		$0.98563	
Total Demand Rates ($ per kW)						
Maximum Peak Demand Summer	$19.65	(I)	$17.49	(I)	$14.06	(I)
Maximum Part-Peak Demand Summer	$5.40	(I)	$4.72	(I)	$3.53	(I)
Maximum Demand Summer	$17.74	(I)	$14.70	(I)	$9.56	(I)
Maximum Part-Peak Demand Winter	$0.12		$0.14	(R)	$0.00	
Maximum Demand Winter	$17.74	(I)	$14.70	(I)	$9.56	(I)
Total Energy Rates ($ per kWh)						
Peak Summer	$0.16055	(I)	$0.14944	(I)	$0.11286	(I)
Part-Peak Summer	$0.11613	(I)	$0.10739	(I)	$0.09859	(I)
Off-Peak Summer	$0.08671	(I)	$0.08036	(I)	$0.07970	(I)
Part-Peak Winter	$0.11004	(I)	$0.10171	(I)	$0.10083	(I)
Off-Peak Winter	$0.09401	(I)	$0.08704	(I)	$0.08632	(I)

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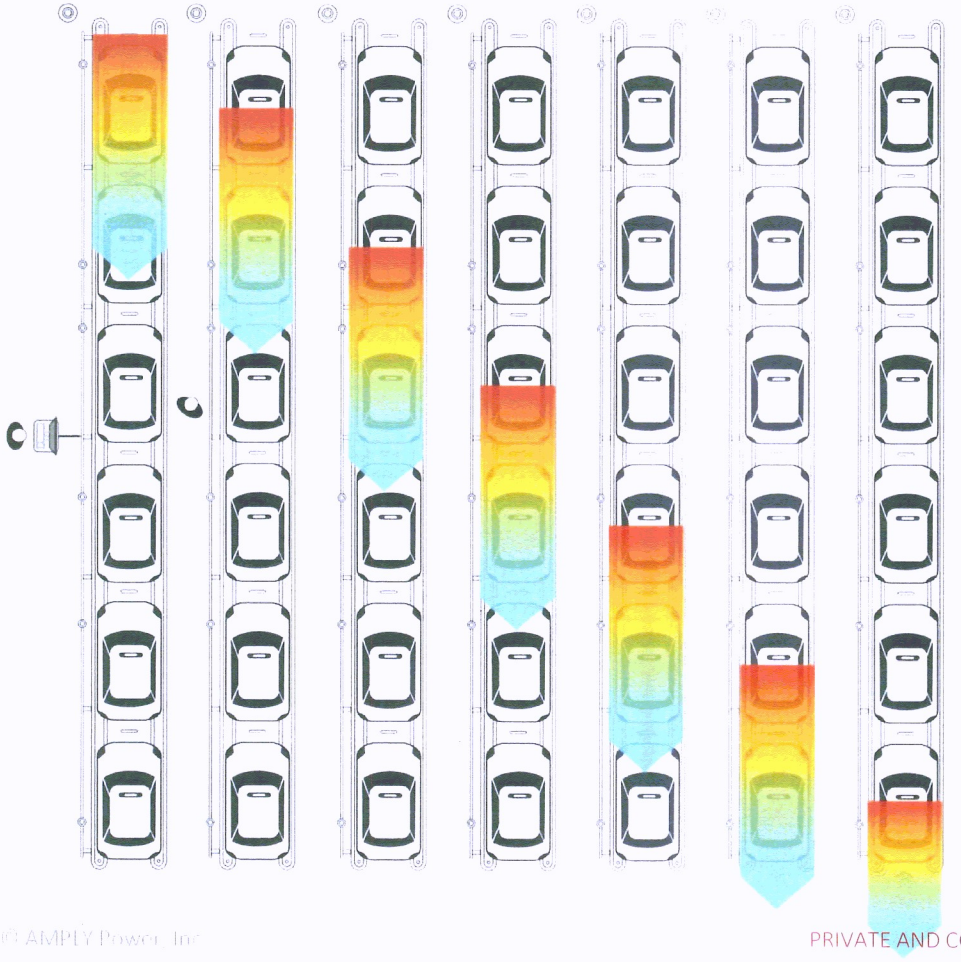
Fleet Charging Simplified

Managed Charging

Applying Business Rules to schedule, rate, and cost

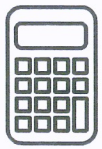


- ✓ To avoid load spikes and demand charges, the system staggers charging start times
- ✓ Exceptions easily injected by Customer

Mission Critical Fleet Charging Service

¢ / e-mile driven

5 – 10 year term*



CAPEX

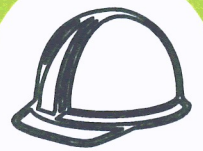
Providing upfront capital for charging infrastructure

Utility Account Holder

Taking financial liability of on-going "fuel"

Facility Setup

Getting to commercial operations



Operations & Maintenance

Managing O&M after COD

Outcome: 90%+ SOC for every operating EV every day; predictable, forecast-able "fueling cost" during contract term.

**inclusive of all CAPEX, OPEX, energy, demand, insurance, taxes*

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Solution Options

Customization to Meet Operators Requirements

	Operation	Self-Financed	Full Service
	Client installs charging infrastructure; AMPLY operates (optionally holds utility account).	Customer pays AMPLY for charging infrastructure and deployment project. AMPLY holds utility account & operates.	AMPLY handles all charging related needs including facility, install, equipment
Client upfront CAPEX	$$$	$$$	-
Client personnel needed onsite	Yes	No	No
Contract term	5 – 10 yrs	5 – 10 yrs	5 – 10 yrs
Contract structure	$/kWh or $/mile driven	$/kWh or $/mile driven	$/kWh or $/mile driven
Availability guarantee	X	✓	✓

E Noa – Sales Example of EV-CaaS process

3 Days from intro to quote

- Dave Siegal engaged
- Discovery Tool Completed
- Proposal
- Pricing and Options
- Indicative Terms Agreed

AMPLY Power: Site Discovery Tool
Customer Info *(please complete)*

	Section 1: Customer organization Contact name	
1.1	Customer Business Name	E Noa Corporation
1.2	Customer website (URL)	https://enoa.com/
1.3	Contact - name	Arnold Albiar
1.4	Contact - Title	Vice President
1.5	Contact - office address	3015 Koapaka St., Suite G Honolulu, HI 96819
1.6	Contact - office phone	808 792 4401
1.7	Contact - cell phone	808 292 4404
1.8	Contact - email	aabliar@enoa.com
1.9	Contact - preferred method of communication regarding site discovery	
	Section 2: Project Information	
2.1	Project Description	ANA airlines has contracted E Noa Corp to operate (2) K9S open-air trolleys b/t Waikiki and Ala Moana Shopping Mall as a free service for ticketed ANA customer. BYD trolleys are provisioned with 270 kWh light duty battery. E Noa has completed HECO review and approval which has resulted in a required 300 kVA new service with transformer and pole upgrade. E Noa has contracted Ronald Ho & Associates as the engineer of record to complete all permitting with City & County of Honolulu. Project scope is to jump in with HECO and take permitted designs and deploy charging infrastructure for two BYD trolleys. E Noa is provisioning to have (4) 80 kW chargers with up to 12 EV BYD buses as final state.
2.2	Project Status	
2.3	Desired Project Timeline	Immediately
2.4	Next Project Milestone and Date	1. Execute final HECO payments to schedule service upgrades 2. Final permit approval and rescope Ronald Ho contract with AMPLY

Assumptions		
Upfront Project Cost	$203,000	
Site-Level Peak Power Draw (kW)	160	kW
Minimum facility energy consumed / month	12,000	kWh
AMPLY Service Fees		
Including CapEx + all OpEx (mgmt, O&M, warranty, insurance, taxes)	$0.3343	per kWh
All-inclusive energy (avg over term)	$0.0391	per kWh
Total	**$0.3734**	**per kWh**
(DPGe equivalent to $5.6 per gallon of gas/diesel)		
...each additional ± $0.05M of capital costs	*$0.0821*	*per kWh*

Role of AMPLY

- ✓ Infrastructure upgrades & project-manage utility interconnection
- ✓ Optimal charging strategy based on drive cycle & duty cycle
- ✓ Debt financing, grant funding to reduce CapEx
- ✓ Own, maintain, & operate charging infrastructure
- ✓ Implement an energy storage & resiliency plan where needed
- ✓ Interface with electric utilities & pay their bills
- ✓ High availability & uptime guarantee

VS.

Role of Fleet Customer

- ✓ Deploy electric vehicles in mission critical operations with high confidence
- ✓ Purchase fuel at known costs for an agreed upon term
- ✓ Scale-up electrification of fleet

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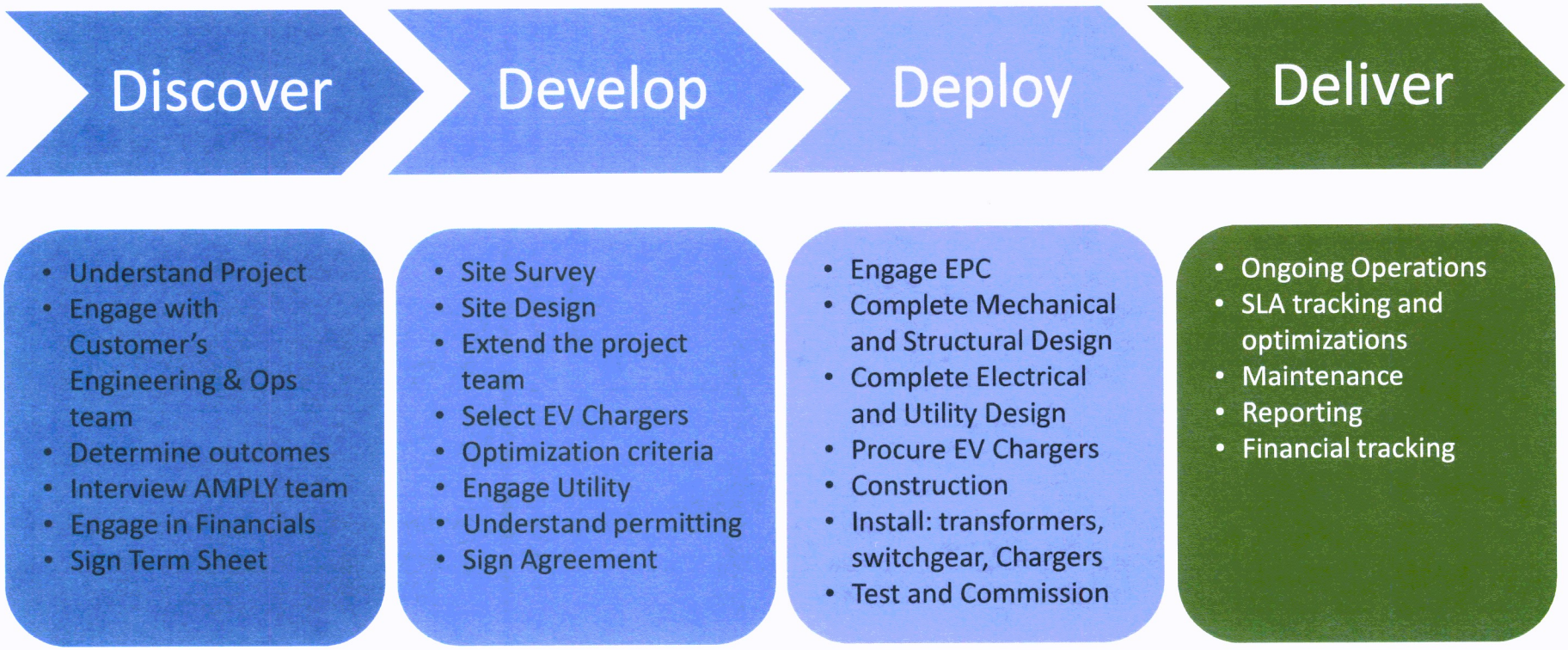
Fleet Charging Simplified

Project Lifecycle

AMPLY is with the Fleet Operator at every stage of the project and operation



AMPLY
Fleet Charging Simplified

AMPLIFY Technology Platform

Business Rules: deliver cost-minimized e-fuel to every vehicle

Connected: EV Chargers, Fleet, Grid and Vehicle Telematics

Real-Time Optimizer: real-world recovery for faults and changes

Resilient Operations: e-fueling every vehicle every day

Fleet Optimized

AMPLIFY: Autonomous Charging System

AMPLY
Fleet Charging Simplified

99.99% Uptime

IoT-enabled & end-to-end managed Fleet Charging Cloud

Customer

CUSTOMER
VEHICLE FLEET

CUSTOMER CLOUD
FLEET MANAGEMENT
ASSET MANAGEMENT

AMPLY

CUSTOMER DASHBOARD / REPORTS

AMPLY ADMIN PORTAL

FIELD MGMT MOBILE APP / NOTIFICATIONS

PROJECT FINANCE / ASSET VIEW

AMPLY API

HARDWARE / CHARGING STATIONS

BUSINESS RULES CHARGING SCHEDULING

REAL TIME OPTIMIZATION

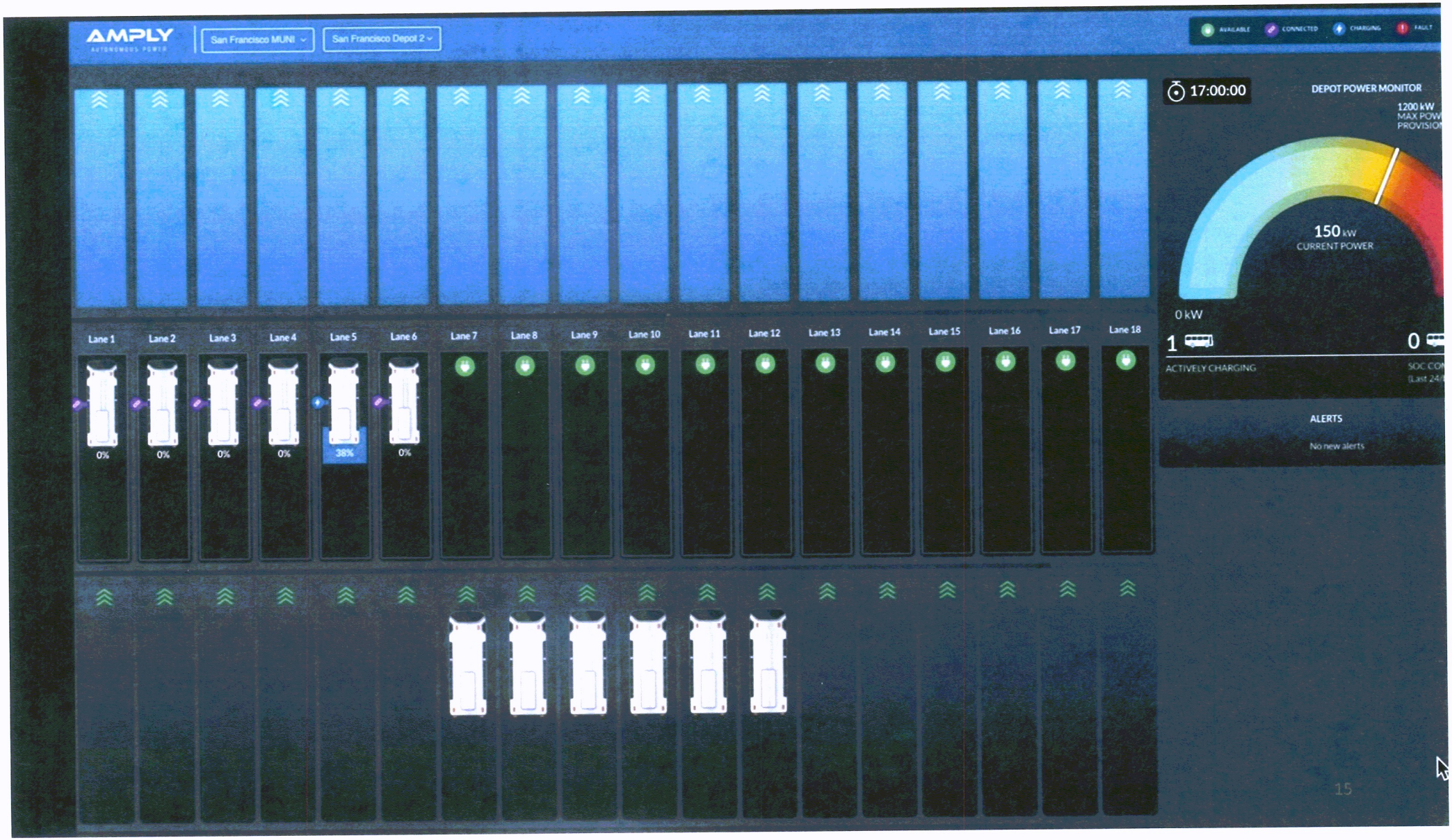
SECURITY, DATA OWNERSHIP AUTHENTICATION

PERFORMANCE (RECOVERY AND ALERTS)

METER REAL TIME POWER

UTILITY GRID SERVICES V2G

Persistence (DB) layer and core services: Customer, Transactions, Profiles

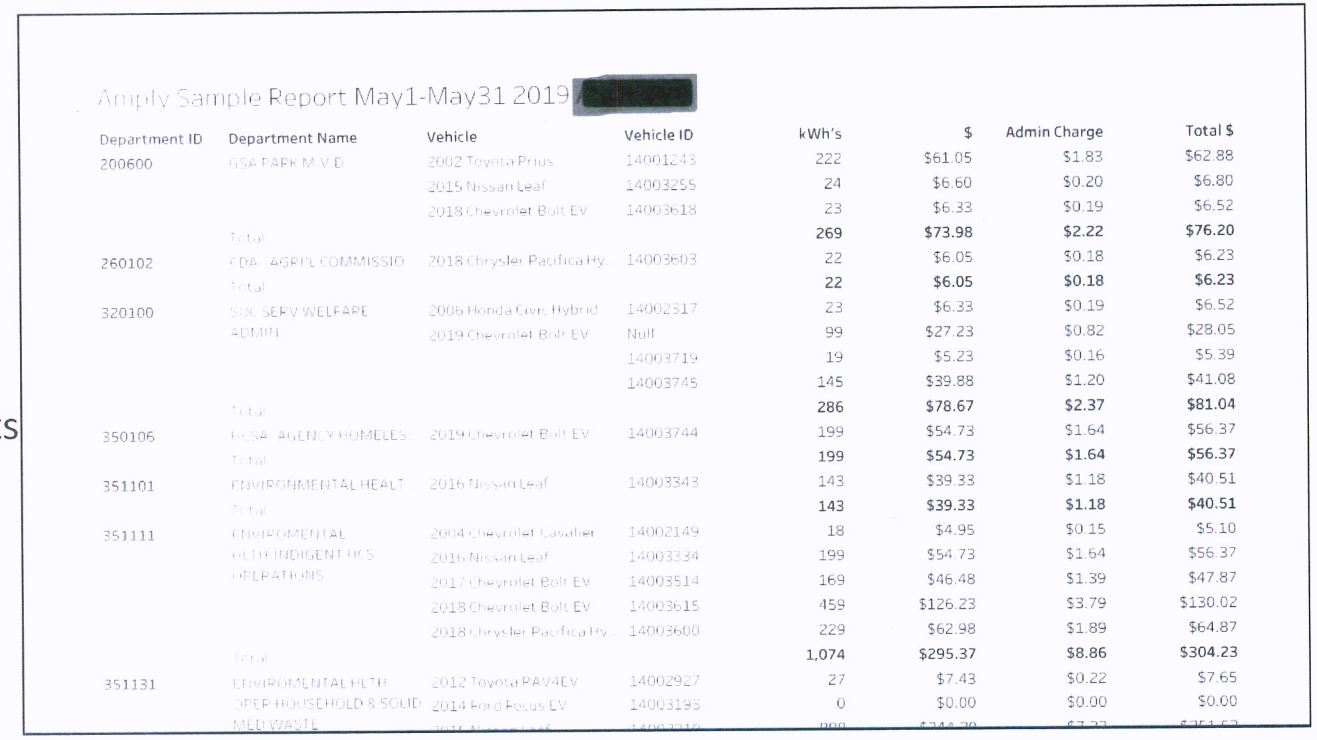

AMPLY
AUTONOMOUS POWER
San Francisco MUNI
San Francisco Depot 2
AVAILABLE
CONNECTED
CHARGING
FAULT
17:00:00
DEPOT POWER MONITOR
1200 kW
MAX POW
PROVISIO
150 kW
CURRENT POWER
0 kW
1
0
ACTIVELY CHARGING
SOC CO
(Last 24
ALERTS
No new alerts
Lane 1
Lane 2
Lane 3
Lane 4
Lane 5
Lane 6
Lane 7
Lane 8
Lane 9
Lane 10
Lane 11
Lane 12
Lane 13
Lane 14
Lane 15
Lane 16
Lane 17
Lane 18
0%
0%
0%
0%
38%
0%

AMPLY
Fleet Charging Simplified

AMPLIFY: Cost Reporting

Understand actual energy/power costs and allocate

- AMPLIFY tracks:
  - Vehicle data
  - Charger data
  - Meter(s)
  - Demand Response and Ancillary Services
  - Fleet Mgmt System requirements



Amply Sample Report May1-May31 2019 [redacted]

Department ID	Department Name	Vehicle	Vehicle ID	kWh's	$	Admin Charge	Total $
200600	GSA PARK M.V.D.	2002 Toyota Prius	14001243	222	$61.05	$1.83	$62.88
		2015 Nissan Leaf	14003255	24	$6.60	$0.20	$6.80
		2018 Chevrolet Bolt EV	14003618	23	$6.33	$0.19	$6.52
	Total			269	$73.98	$2.22	$76.20
260102	CDA - AGRPL COMMISSIO	2018 Chrysler Pacifica Hy...	14003603	22	$6.05	$0.18	$6.23
	Total			22	$6.05	$0.18	$6.23
320100	SOC SERV WELFARE ADMIN	2006 Honda Civic Hybrid	14002517	23	$6.33	$0.19	$6.52
		2019 Chevrolet Bolt EV	Null	99	$27.23	$0.82	$28.05
			14003719	19	$5.23	$0.16	$5.39
			14003745	145	$39.88	$1.20	$41.08
	Total			286	$78.67	$2.37	$81.04
350106	H-SA - AGENCY HOMELES	2019 Chevrolet Bolt EV	14003744	199	$54.73	$1.64	$56.37
	Total			199	$54.73	$1.64	$56.37
351101	ENVIRONMENTAL HEALT	2016 Nissan Leaf	14003343	143	$39.33	$1.18	$40.51
	Total			143	$39.33	$1.18	$40.51
351111	ENVIROMENTAL HLTH INDIGENT HCS OPERATIONS	2004 Chevrolet Cavalier	14002149	18	$4.95	$0.15	$5.10
		2016 Nissan Leaf	14003334	199	$54.73	$1.64	$56.37
		2017 Chevrolet Bolt EV	14003514	169	$46.48	$1.39	$47.87
		2018 Chevrolet Bolt EV	14003615	459	$126.23	$3.79	$130.02
		2018 Chrysler Pacifica Hy...	14003600	229	$62.98	$1.89	$64.87
	Total			1,074	$295.37	$8.86	$304.23
351131	ENVIROMENTAL HLTH OPER HOUSEHOLD & SOLID MED WASTE	2012 Toyota RAV4EV	14002927	27	$7.43	$0.22	$7.65
		2014 Ford Focus EV	14003193	0	$0.00	$0.00	$0.00
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

- Allows actual cost reporting, plus ability to add overhead costs if apportioning to other departments

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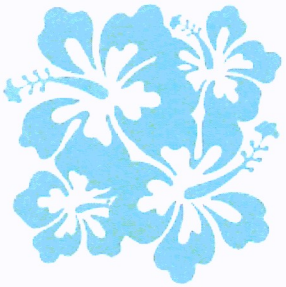
Fleet Charging Simplified

Electric Bus Opportunities Hawaii

AMPLY"s Operations-only business model

- HI PUC approved a pilot "ebus rate tariff"
- AMPLY to pay for, own, operate EVSE infrastructure. County to pay $0 upfront, pay overtime/utilization
- AMPLY to provide County with necessary data, to make informed decision to scale electrification
- AMPLY managed charging delivers the lowest $/kWh possible
- Real time monitoring and maintenance to insure 99% uptime guarantee.
- County can take a big step towards its electrification goals



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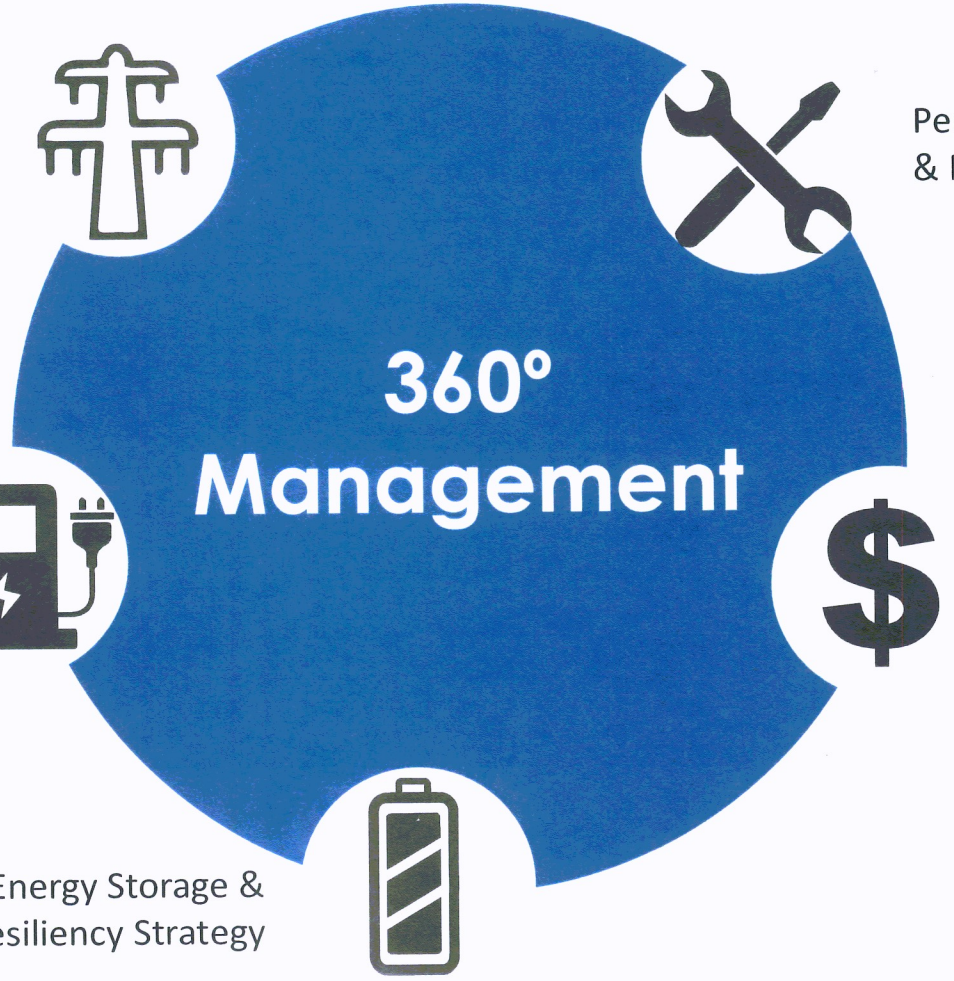
Unique Approach

Serves as Utility Account Holder

Performs Onsite Operations & Maintenance Services



Hardware Agnostic; Operate Smart Charging Solutions

Invests in Technology Upgrades As Needed

Implements Energy Storage & Resiliency Strategy

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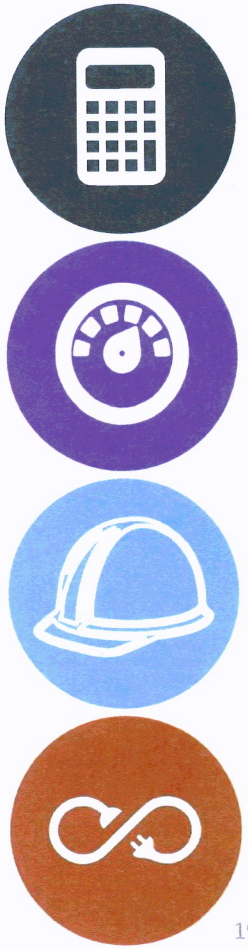
EV Fleet Charging as a Service

Mission Critical Service, Pay for Usage - Not For Equipment



- ✓ Zero capex (we own: utility meter, chargers, construction)
- ✓ Guarantee every electric vehicle charged every day
- ✓ Long-term, fixed price usage model (cents-per-mile or per-kWh)

- ✓ AMPLY Power, the "electric transportation PPA"
- ✓ We enable fleets to migrate to electric fuel … at scale

AMPLY

Fleet Charging Simplified

Questions and Discussion

AMPLY Power, Inc.

Rob Kelly
V.P. Business Development
&
Dave Siegal
Director of Operation