

# 2ndLife Batteries®

**Making Energy Storage Projects  
“Pencil Out”**

**More Energy For Less Cost  
Through Knowledge™**

# TAKE AWAYS

- 2ndLife Batteries®
  - Values and Opportunities for Solar
- Jeeves™ Demand Charge Optimizer Service
  - opportunities in EV charging & Industry

## Corporate History

- 2016 first sales of 2ndLife systems as Energy Storage Application
  - Spun off from WeRecycleBatteries.com that shipped millions of lbs of batteries for recycling since 2010
- Shipped 8.5MWH of 2ndLife Batteries
  - Lead-acid systems and in Q1-Q2 2022 Li-ion
  - Various applications
  - If categorized as solar energy storage @ 50% DoD
    - power 200 homes for 8 hours for 3+ years
- 2021-2022 focus on Li-Ion batteries

# Lithium-ion Ferrous (Iron) Batteries

*At **-\$35+/kwh ADVANCE PAY** for LFP recycling*

## Good Technology

On New Sales”: plan to ahead - and collect recycling as part of Warranty program

Second-Life Revenue offset Recycling costs with Leasing

## Negative Cost to Ship & Recycle

HAPPY Customer buys again because you have the funds to offset the recycling of old product.

Plan ahead, and replace batteries under lease so they are returned with 50-70% capacity

## 2ndLife Sourcing and Certification

- SAFETY FIRST!
- Sources are proprietary but in general they are
  - Backup batteries that have had low cycling, and have years left
  - overstock
  - Soon Electric vehicle sources
- Lead batteries have existing stationary storage testing and certification.
- Li-ion - much different path and with expensive re-certification costs



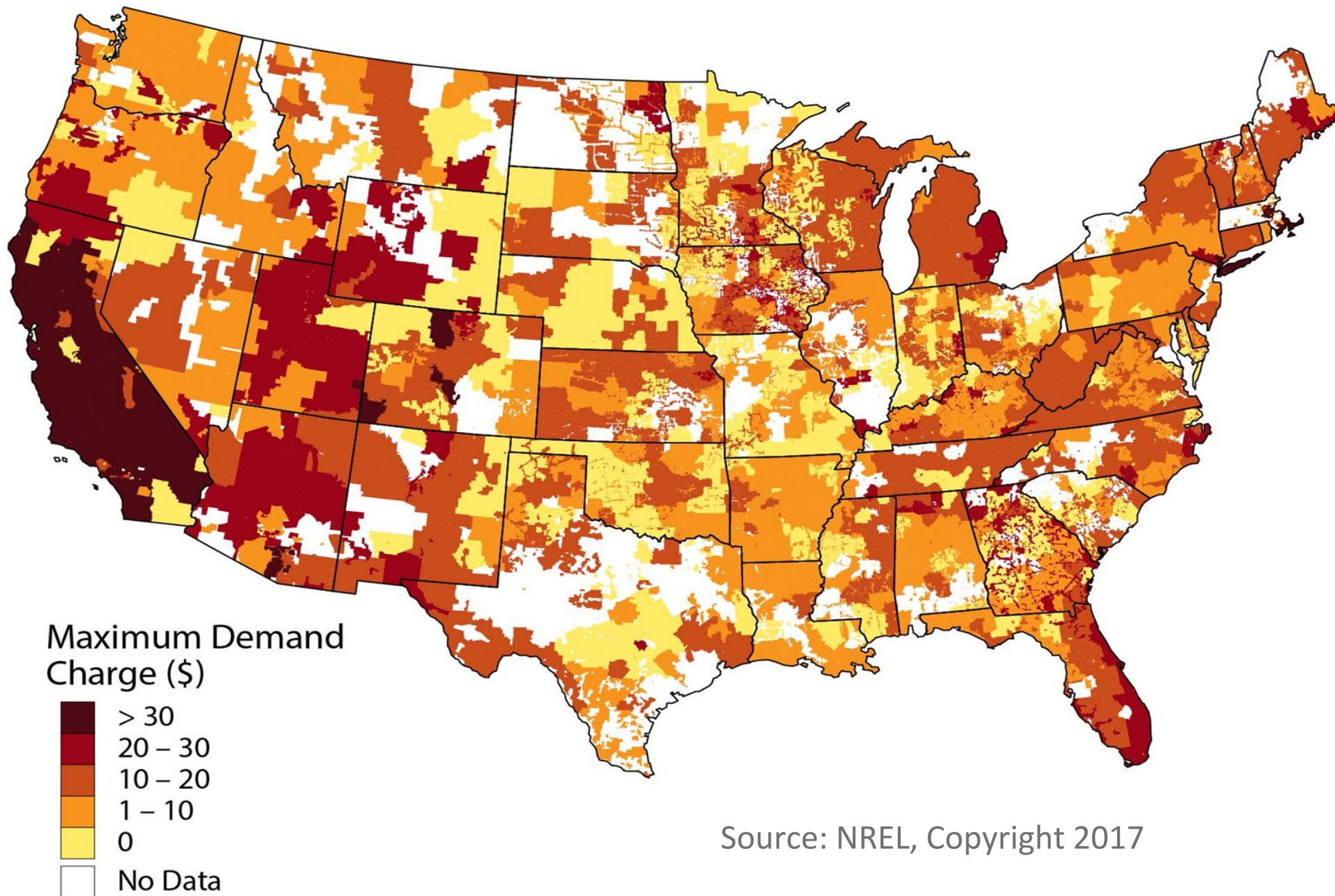
## Quebec based Solar Company

- 4000AH x 196 KWH  
off-Grid System -  
Installed Nov 2018
  - 96KWh @ 50% DOD
- 5 Bank Branch  
reliable power in  
Democratic Republic  
of Congo Shipped in  
2020. 1200AH x 48V =  
57.6 KWH systems





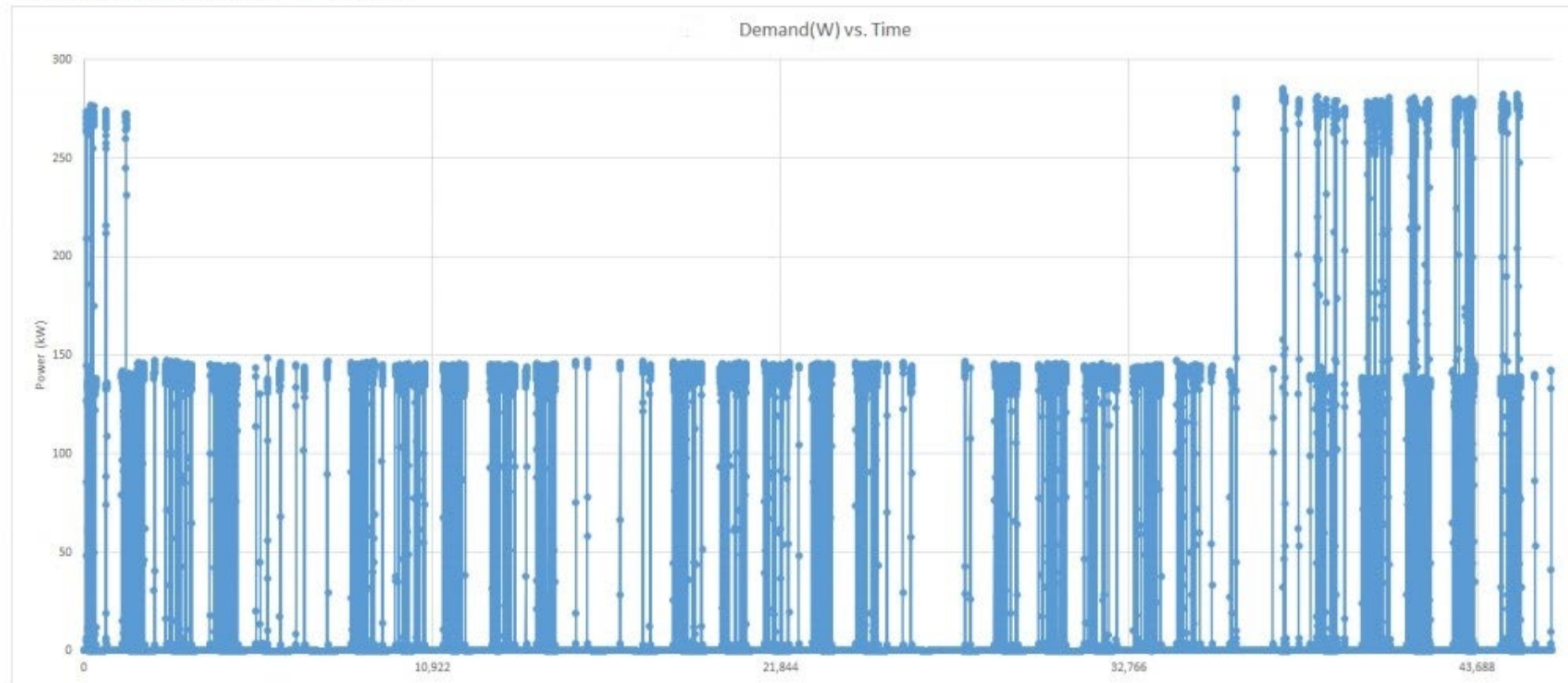
## Maximum Demand Charges by Utility Territory



Source: NREL, Copyright 2017

# 1 Month of Demand Charge Power Spikes

Monthly Demand Profile

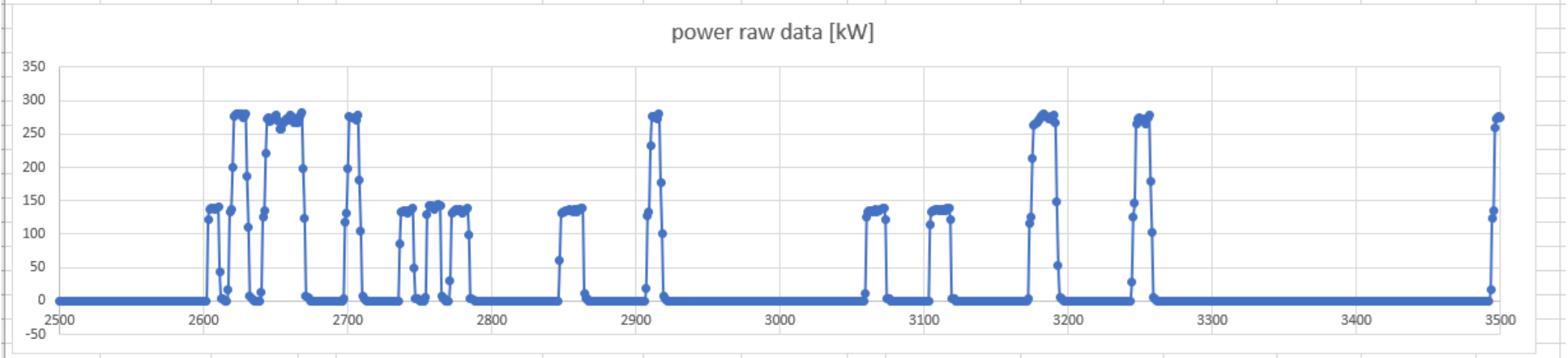




## Demand Charge System ROI SERVICE

Sample Test Data

R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
Data Time Increments [min]	Optimized Demand Threshold Power [kW]	Optimized CPT [min]		Average Energy Discharge per Event [kWh]	Max Energy Discharged [kWh]	Max Recharge Power [kW]	Demand Shaved [kW]			Cost Breakdown (budgetary)	Total System Cost	Demand Charge \$/kW	Demand Savings [\$/month]	Straight Payback [years]
1	120.0	52.0		57.9	244.7	172.3	112.8		Batteries (incl rac	\$ 76,459.97	\$ 183,897.96	\$ 10.26	\$1,157.14	13.24
Upper Limit	200	200							Power Electronics	\$ 35,000.00			\$13,885.63	
Lower limit	40	15		Max DoD	80%				Enclosure	\$ 30,000.00			-\$ 45,041.68	
				Req'd Storage kWh	305.84				Install/Comm	\$ 42,437.99				
				Avg Discharge Power	56.92				Fudge	0				
				Avg Discharge C-Rate	0.19									
				Average Discharge Duration	90.24									
				Avg Recharge Power	34.62									
				Avg Recharge C-Rate	0.11									
				Average Recharge Duration	253.76									





# 2ndLife Batteries® Jeeves™





## Demand Charge System ROI

### SERVICE & System Solution

- We want to team up
  - EV Charging Companies and Electrical Contractors needing cost reduction
  - Compressed Natural Gas fueling and storage locations
  - Manufacturing plants using air compression in automation
- Design a complete 2ndLife system to LOWER Costs



# Thank You

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