

Moving Emerging Technologies into the Market: Insights from a Field Evaluation of Advanced DOAS Technology

Panel 1

Presenters



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The Science of How it Works – Conditioner Core

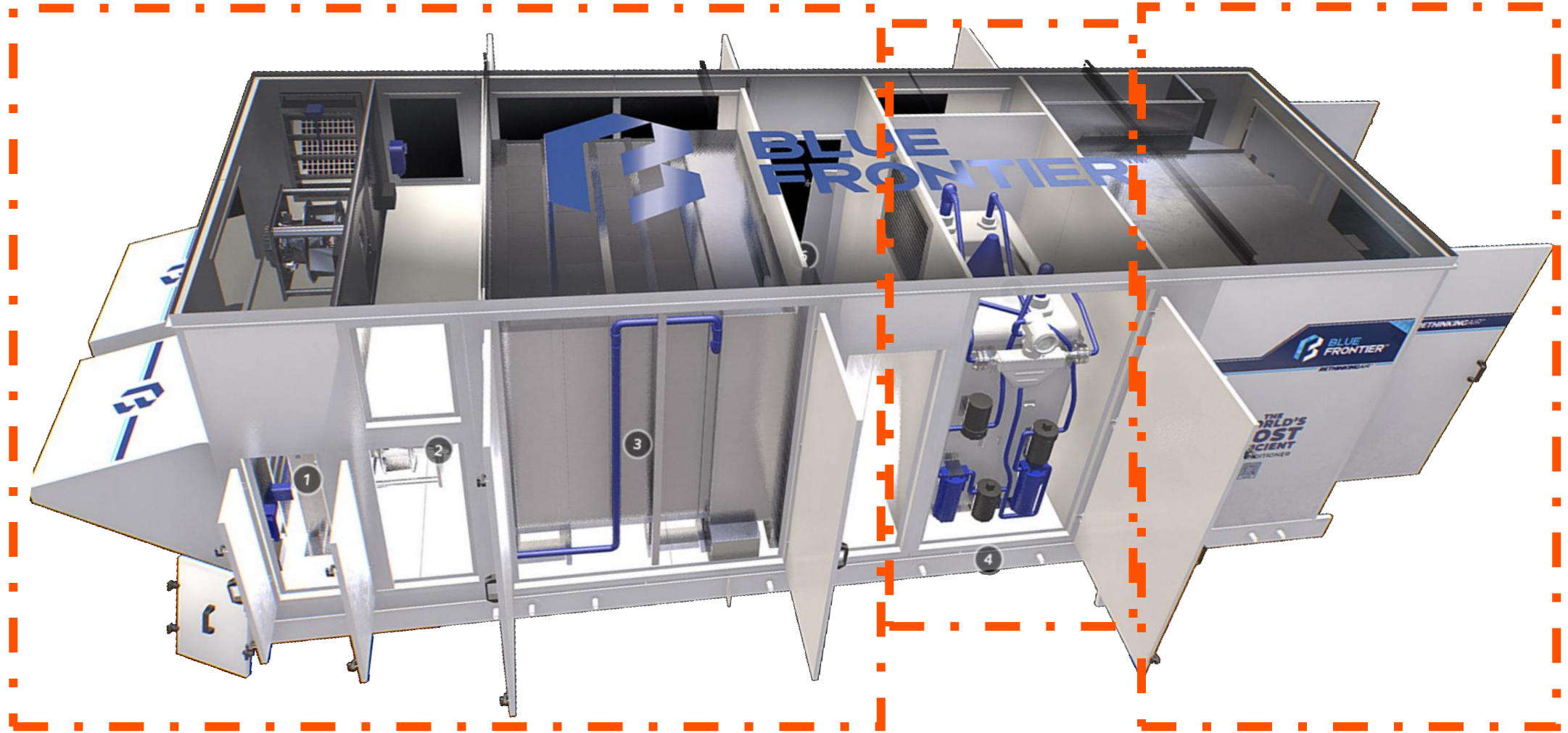


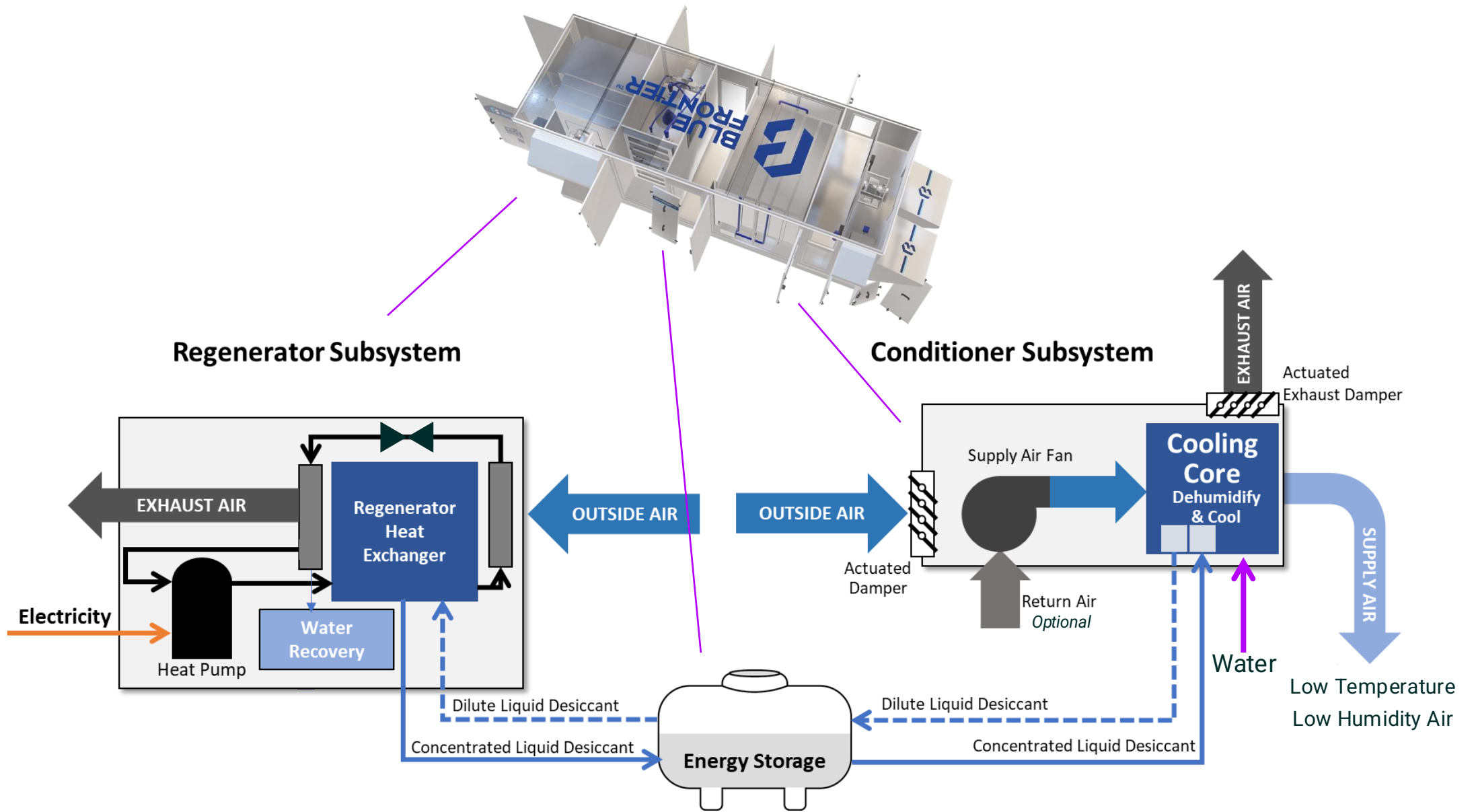
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DISCHARGE CONDITIONS
48-55°F (9-13C) Dewpoint
55-75F (13-24C) Dry bulb
25-100% Fresh Air

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TE-Sal Desiccant Enhanced Air Conditioning System With Indirect Evaporative Cooling





Project Objectives

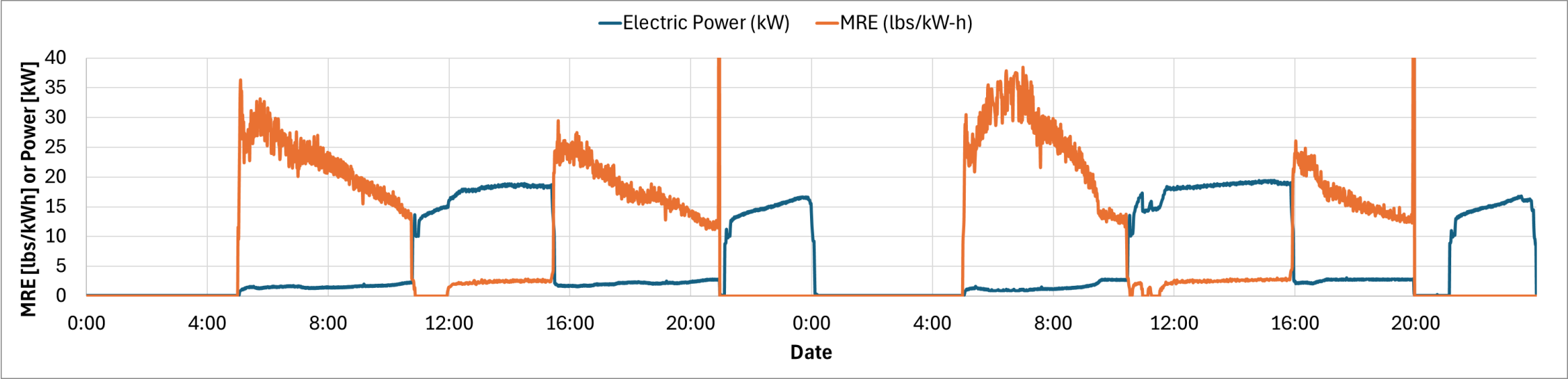
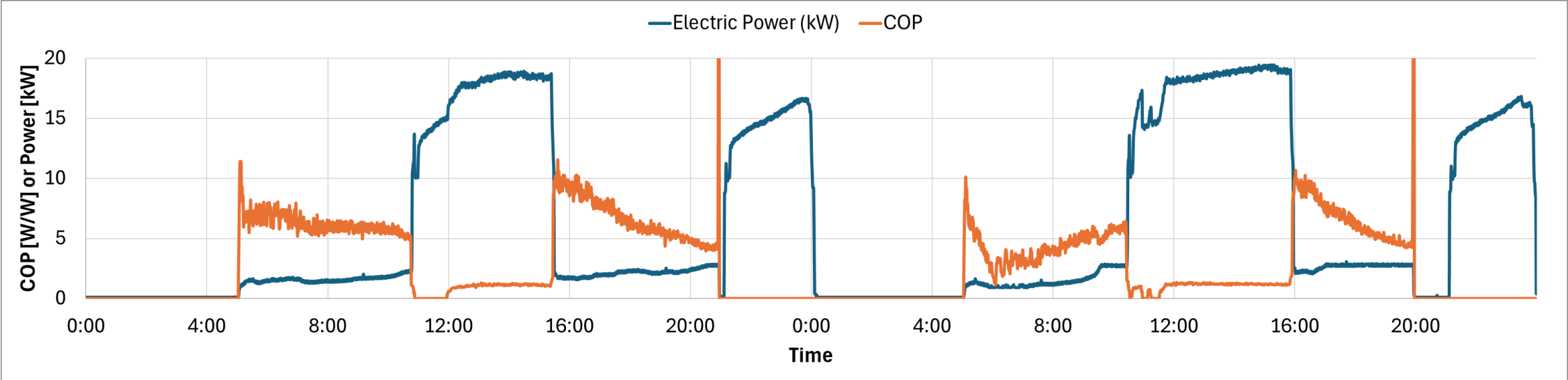
- Install and monitor liquid desiccant DOAS system
- Measure energy performance
- Measure peak load shifting
- Model performance relative to baseline
- Provide recommendations for next steps



Methodology

- Install LD-DOAS on grocery store
- Install monitoring equipment
- Use data to validate performance model
 - Compare to DX-DOAS performance model
- Estimate annual performance for multiple California climate zones
 - Based on DOAS supplying 2,500 CFM @ 75F/55F (DB/DP)
 - Energy use (total and during peak hours)

Results (two days in September 2025)



Modeled Performance

- Performance was modeled assuming DOAS provides moisture removal at room-neutral temperatures
- DX-DOAS relies on cooling below dewpoint and reheat (no supplemental cooling)

Annual Energy Use Comparison DX-DOAS vs. LD-DOAS

California Climate Zone	DX-DOAS Annual Electricity Usage (kWh)	LD-DOAS Annual Electricity Usage (kWh)	LD-DOAS Annual Electricity Savings (kWh)	% Savings
8	42,577	22,057	20,500	48%
12	28,250	9,829	18,421	65%
15	60,718	18,782	41,936	69%

Annual Peak Energy Use (4-9 p.m.) Comparison DX-DOAS vs. LD-DOAS

California Climate Zone	DX-DOAS Peak Demand (kWh)	LD-DOAS Peak Demand (kWh)	LD-DOAS Peak Demand Savings (kWh)	% Savings
8	8,725	1,676	7,049	81%
12	7,938	1,605	6,333	80%
15	15,038	2,038	12,465	83%

Conclusions and Next Steps



Project Conclusion

- Measure significant load shifting potential and outdoor air conditioning efficiency
- LD-DOAS de-couples latent and sensible cooling allowing better control of supply air conditions



Next Steps

- Further field testing along side relevant baseline to confirm modeled savings
- Disseminate results to stakeholders including OEMs and Utility Program staff



Thank You!

Project Final Report



Curtis Harrington
Akane Karasawa
Dominique Lempereur

Flyover Video

https://www.dropbox.com/scl/fi/2vvzo1uye9lpf0b9aqq7z/Valencia_Flyover_July2026.mp4?rlkey=bmds6zzdmcp9dklot2a77weiy&st=45ghfi8n&dl=0