

## Integration of Lighting Controls with Utility DR Signals

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# Project Summary

- Develop, test and demonstrate **lighting control systems** that **automatically respond** to utility **DR** signals
- Solution includes **communication/control**
  - from **utility** to building;
  - from **building** to fixture.

# Current Activities

- SCE: selection of systems for installation
  - Convia
  - Lutron EcoSystem (DALI-based)
  - Universal DCL
- CLTC: identification and evaluation of technologies for
  - Communications between utility and building
  - Lighting controls

# Systems Installed

- ECC/Universal fixtures installed
  - Controls expected next month
- Convia installed, 80% tuned, waiting for DSL connection to complete programming
  - Expect to begin DR testing in March
- Lutron system is not installed
  - Expect installation within the next 90 days



# DR signal communications

Technologies	Criteria			
	Cost	Speed	Reliability	Availability
Internet	+	+	+	+
Land-line phone/fax	-	-	+	+
Text messaging	-	+		+
Radio (commercial)		+		+
Radio (dedicated)	-	+		-
Pager	-	+		
Power line		+	+	
TV cable		+	+	-
Satellite	-	+		

# Lighting controls



Technologies		Criteria					
		Market	Cost	Reliability	Development	Lighting only	Open
Wired	DALI	Comm			Comm. Avail.	y	y
	BACnet	Comm			Comm. Avail.	n	y
	IBECs	Comm			Prototype	n	?
	Lutron Ecosystem	Comm			Comm. Avail.	y	n
	Convia	Comm			Comm. Avail.	n	n
Wireless	Zigbee	Comm?			Comm. Avail.	n	y
	Z-wave	Res?			Comm. Avail.	n	y
	WiLight				Prototype	y	?
	Bluetooth				Comm. Avail.	n/a	y
	WiFi				Comm. Avail.	n/a	y
	Convergence				Prototype	?	n
	Aura	Comm?			Prototype	y	n
Power line	CEDR				Prototype	n	?
	Insteon	Res			Comm. Avail.	n	y
	UPB	Res			Comm. Avail.	n	y
	DCL	Comm			Comm. Avail.	y	?
Hybrid	Insteon	Res			Comm. Avail.	n	y
	LonWorks				Comm. Avail.	n	n
	X-10	Res			Comm. Avail.	n	y

# Synergies with other projects

- LCF Project 3
  - CEDR
- PIER Demonstration
  - 3-Byte DALI