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MEMO

To: California Energy Commission
From: PCT Research Team, UC Berkeley
Re: Tuning Receivers for 1-Way Statewide Default DR Dispatch

The CEC has had a question regarding 1-way broadcast communications: **Can the CEC/CPUC specify the communications receiver in the PCT without finalizing the details on how the network would be used and operated?**

The answer to this question is **yes**. We will first describe a scenario of how the device will work and then list those things which need or need not be specified.

Scenario:

1. A customer purchases a PCT which has embedded communication on-board for the statewide default system.
2. Upon installing the batteries, the PCT enters an 'autoscan' mode which enables the receiver to start scanning commercial broadcast channels. In the case of RBDS, the receiver knows upon successfully tuning into a station whether or not it is carrying a sideband channel of extra information. Other technologies, such as digital TV infrastructure or HD-radio would operate similarly.
3. If the station is carrying RBDS (sideband channel) data, the PCT listens to the incoming packets for a sequence of data which specifies that this channel hosts a DR data application.
4. The PCT records the signal strength and the amount of packet errors for that station and resume scanning.
5. Once the PCT has swept through the commercial spectrum, it defaults to the DR-carrying channel with the best signal strength and error rate and stores this station in non-volatile memory so that it can retain this setting across battery changes.
6. The PCT waits to receive a time-synchronization signal from the station and updates its clock. The PCT then shuts off the radio and only enables it every 5 minutes for 2 seconds to listen for DR dispatches, saving battery power when it is off.

In this scenario, the only setup required of the installer or user may be to input some membership information (ISO/Utility/Substation) to support minimum-functionality emergency response.

Potential issues with this scenario:

- Setup Time
Depending on the commercial broadcast technology and the available stations for a given

media market, this process could take on the order of one minute, 10 minutes, or an hour. The radio receiver will be running at its highest power consumption during autoscan, but this should not impact the operational life and only needs to be done whenever the PCT is moved.

- Antenna

The antenna for the default receiver may be small enough to integrate into the PCT itself, though for some communications technologies it may be connected externally to the main unit (i.e. connected through the mounting plate). If the antenna is not connected to the PCT during the autoscan, this scenario may not be viable and autoscan must be done by the customer after the PCT is installed to its mounting plate.

Specification:

- Broadcast Technology

This will need to be agreed upon and specified by MFR spec.

- Frequency (carrier channels)

These do not need not be specified, though the state should ensure a minimum density of stations per geographic area. Early testing should reveal what that minimum density needs to be.

- Information Model

The basic information model for PCT's needs to be part of the manufacturer specification to support the minimum level of functionality in using the default statewide communication network.