SCE DRET Findings
July 2019

DR14.07: Residential Crawl Space and Attic Conditioning and Sealing Retrofits

OPPORTUNITY

What have previous studies demonstrated about the potential for conditioned residential crawl spaces and attics?

The measure can improve building envelope air tightness, reduce duct leakage loads, reduce humidity levels, and improve overall air quality. It also has potential to improve demand response effectiveness by increasing available cool air and thermal inertia. Previous studies have shown that crawl space sealing can achieve 15-32% potential energy savings in new construction, and attic sealing can achieve 6-20% potential cooling energy savings in new construction.

TECHNOLOGY

How do conditioned crawl space and attic retrofits work?

The measure under study is the sealing and conditioning of existing baseline crawl spaces and attics. This involves a ground/floor vapor barrier, closed cell foam insulation on the walls, and a pathway for conditioned air to circulate.

M&V

Where did Measurement and Verification occur?

To achieve the objectives of the study, a field assessment at four (4) existing residential sites at different SCE service territory locations was conducted over a period of three (3) years. The first year of the study was for baseline monitoring and the second (crawl space) and third (attic) years were for post-implementation measure monitoring.

RESULTS

How did conditioned crawl spaces and attics perform in M&V?

Summary of Energy Savings

Crawl Space Sealing	ANNUAL ELECTRICITY SAVINGS (KWH/YR)	ANNUAL GAS SAVINGS (THERM/YR)	AVG DEMAND RESPONSE REDUCTION (KW)
Packaged AC with Gas Heat and Crawl Space Ductwork – Desert Hot Springs	2,132.3 (28%)	55.7 (59%)	1.14
Split System with Attic Ductwork -Fullerton	828.0 (26%)	-17.4 (-10%)	0.95
Window Units - Pomona	64.1 (19%)	n/a	n/a
Crawl Space and Attic Sealing	ANNUAL ELECTRICITY SAVINGS (KWH/YR)	ANNUAL GAS SAVINGS (THERM/YR)	AVG DEMAND RESPONSE REDUCTION (KW)
Packaged AC with Gas Heat and Crawl Space Ductwork – Desert Hot Springs	-8.5 (0%)	14.6 (26%)	0.98
Split System with Attic Ductwork -Fullerton	490.0 (16%)	71.1 (39%)	0.50
Window Units - Pomona	113.4 (32%)	n/a	n/a

DEPLOYMENT

What are the recommendations moving forward regarding conditioned crawl spaces and attics?

Further measure support is recommended

Prospective measure support includes comprehensive modeling and sensitivity analysis for both measures. A custom solution or software modification might be needed. Program support could also include code enhancement studies, packaged residential rebates/incentives, best practice guidelines, and contractor training/outreach.