

ANALYSIS OF THE APPLICABILITY OF EPA'S SPCC PROGRAM TO THE ELECTRIC UTILITY INDUSTRY

1. EXECUTIVE SUMMARY

This analysis of the electric utility industry examines the degree to which the SPCC program applies to electrical substations and transformer installations. The analysis is based on the results of EPA's 1995 Survey of Oil Storage Facilities (1995 SPCC Survey), which collected information from more than 2,600 oil-storing facilities in 23 different industries, and provided information on facility and tank characteristics, spill incidents, and facility operations. EPA's analysis provides estimates of the number of electric utility facilities that have one or more substations or transformer installations storing oil in sufficient quantities to be regulated by the SPCC program. The results indicate that a majority of facilities in the electric utility industry have substations and transformer installations that meet the SPCC aboveground storage capacity thresholds. Comparatively few electric utility facilities have substations and transformer installations that store greater than 42,000 gallons. EPA was unable to estimate the total population of substations and transformer installations for the nation as a result of the non-normal distribution of the size of facilities in the electric utility industry.¹

2. APPROACH

EPA's analysis estimates national totals for electric utility industry facilities in the following four categories:

- The number of electric utility facilities with at least one substation storing greater than 660 gallons of oil in a single piece of equipment or greater than 1,320 gallons in total;
- The number of electric utility facilities with at least one substation storing greater than 42,000 gallons of oil;
- The number of electric utility facilities with at least one transformer installation storing greater than 660 gallons of oil in a single piece of equipment or greater than 1,320 gallons in total; and
- The number of electric utility facilities with at least one transformer installation storing greater than 42,000 gallons of oil.

To obtain a national estimate, EPA first estimated sample totals for each of the four categories based on survey responses received from facilities in Standard Industrial Classification (SIC)

¹ For purposes of the 1995 SPCC Survey, a facility in SIC 491 was defined to include all oil storage capacity within a given county owned or operated by a single company.

Code 491. EPA then used an inflation estimator for two-stage cluster sampling to generate estimates for each category. Specifically, the first stage of a two-stage cluster sample used in this analysis involved randomly selecting primary sampling units (PSUs) that are representative of the entire survey population. The selected PSUs were single counties or contiguous groups of counties that are representative of all counties in the U.S. The second stage involved randomly sampling individual facilities from each PSU that are representative of all of the other facilities within that PSU. By doing this, EPA could extrapolate the number of facilities to the PSU and then extrapolate PSU-level estimates to the contiguous United States.

3. RESULTS

According to the U.S. Census estimates², there are 5,523 facilities nationwide in the electric utility industry. EPA's 1995 Survey data indicates that approximately 48 percent, or 2,638, are regulated by the SPCC program. Of these, approximately 92 percent or 2,431 facilities operate at least one substation storing greater than 660 gallons of oil in one tank or piece of equipment, or a total of more than 1,320 gallons. Approximately 26 percent or 694 facilities have at least one substation that stores greater than 42,000 gallons of oil. With respect to transformers, approximately 54 percent or 1,431 facilities operate at least one transformer installation storing greater than 660 gallons of oil in one tank or piece of equipment, or more than 1,320 gallons in total. Approximately 10 percent or 265 facilities have at least one transformer installation that stores at least 42,000 gallons of oil. The results suggest that a facility in the electric utility industry is likely to have substations or transformer installations that meet the aboveground storage capacity thresholds of the SPCC program.

Exhibit 1 graphically presents the estimates generated in this analysis. On the graph, the shaded bars represent the point estimate for the particular question and the thin vertical line indicates the 90 percent confidence interval around the point estimate for that question. For comparison purposes, the exhibit also shows the total number of electric utility facilities in the country. Exhibit 2 presents the estimated percentage of facilities that fit the oil storage volume characteristics outlined above.

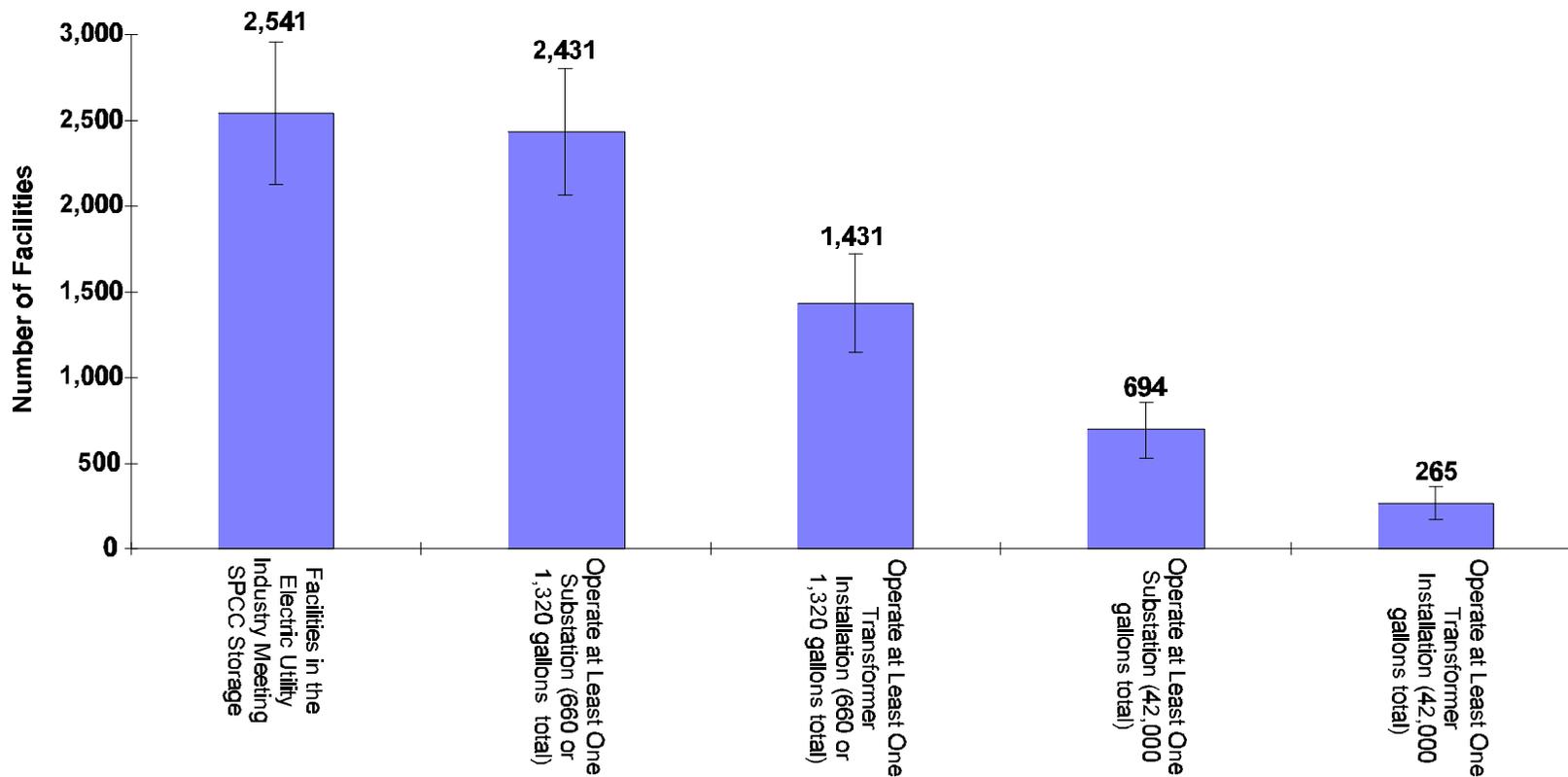
4. DATA LIMITATIONS

It is important to note that the extrapolated totals estimated in this analysis are based on a small subset of survey responses. This is because the survey was designed to gather information about the SPCC universe as a whole. As part of this analysis, 2,607 respondents completed the survey questionnaire; however, only 41 respondents indicated that they were in the electric utility industry. Accordingly, the small sample size used for extrapolating these estimates results in relatively wide 90-percent confidence intervals (+/- 15 to 35 percent, depending on the survey question).

² *County Business Patterns*, U.S. Bureau of Census, 1993.

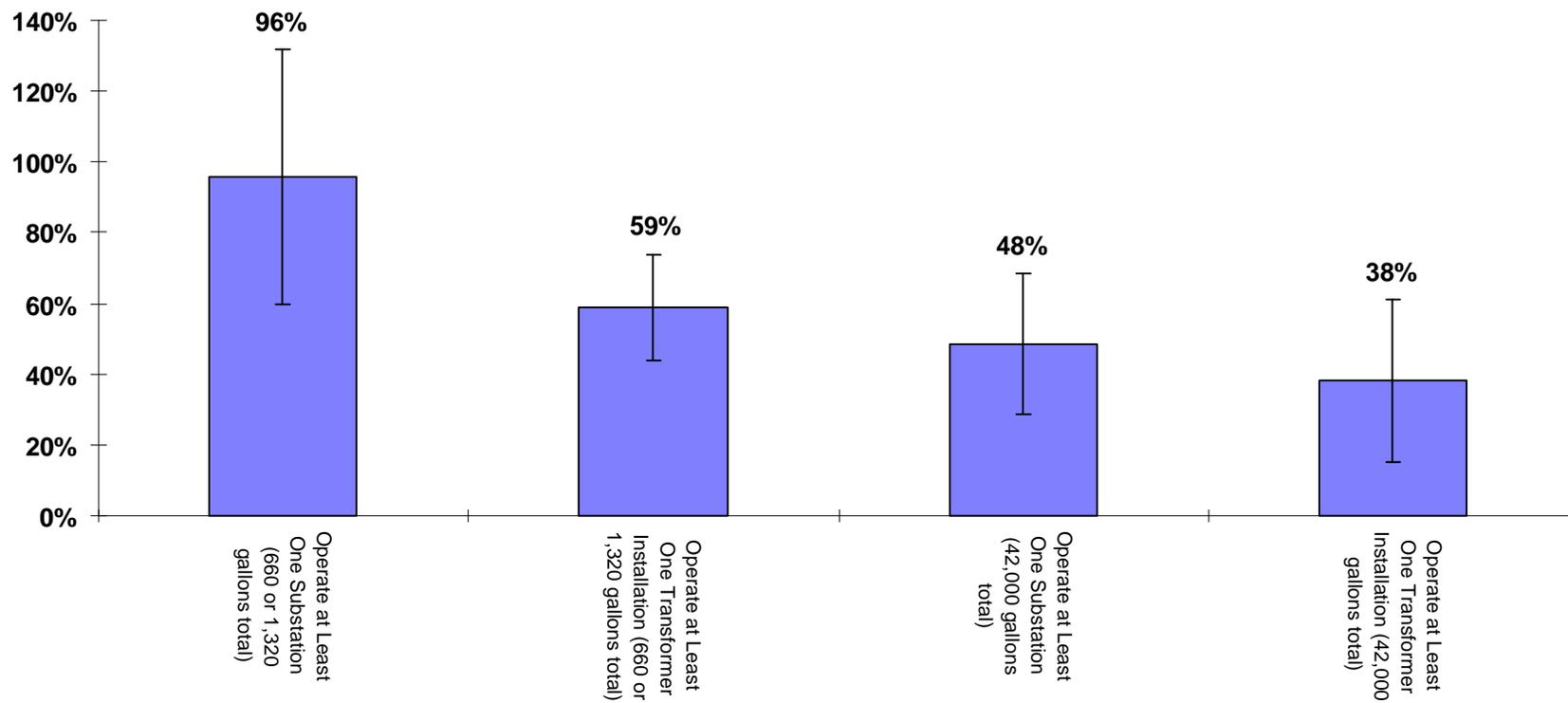
Another data issue prevented EPA from developing reliable estimates of the total number of substations and transformer installations -- as opposed to the total number of facilities -- throughout the country. Specifically, the non-normal distribution of the size of

**Exhibit 1:
Breakdown of Substations and Transformer Installations Meeting SPCC Storage Requirements in
the Electric Utility Industry**



Results of 1995 Survey of Oil Storage Facilities (July 1996)
United States Environmental Protection Agency

**Exhibit 2:
Percentage Breakdown of Facilities Meeting
SPCC Storage Requirements in the Electric Utilities Industry**



Results of 1995 Survey of Oil Storage Facilities (July 1996)
United States Environmental Protection Agency

establishments in SIC 491, with a relatively small number of electric utility companies generating a relatively large amount of the total electricity, makes such extrapolations from the survey infeasible and would result in skewed national estimates. For example, EPA randomly selected only one company out of the 82 facilities in Los Angeles County in SIC 491 as a result of the sample selection process across the different sampling units or counties. However, because this single company accounts for over 70 percent of the total electricity generation for Los Angeles County,³ any extrapolations to the remaining 81 establishments would result in extremely skewed and inaccurate estimates. To avoid these pitfalls, this analysis only generated estimates of the number of establishments with at least one transformer or substation facility, as opposed to the total number of transformer installations or substations in the country.

³ Estimate provided by Southern California Edison Company.

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United States Environmental Protection Agency