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February 1979

Organized Labor and Solar Energy

Market Development Branch
Technology Commercialization Division

SERI

Solar Energy Research Institute
A Division of Midwest Research Institute

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Golden, Colorado 80401

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FOREWORD

Both union and nonunion labor share in the national responsiblity for the development of alternative sources of energy to reduce the nation's dependence on diminishing sources of foreign and domestic fossil fuels. Further, the introduction of solar energy systems offers a new and rapidly growing market for the skills of the manufacturing and construction crafts.

To better understand the needs and concerns of the union community and to establish a foundation for working together in the advancement of solar energy applications, SERI has sought the positive involvement of organized labor and a cooperative working relationship that will enhance the commercial development of solar energy.

To date, SERI has initiated communication at both national and local area levels with appropriate union offices and officials. Through such communication channels, SERI will be in a position to keep union officials abreast of developments in solar energy and simultaneously to learn of the problems that unions may have regarding the progress and changes in solar technologies.

It has been assumed throughout the project that the degree to which solar energy becomes a substantial alternative energy source in the coming years will depend to a considerable extent on its acceptance by a diverse multiplicity of American "publics" or interest groups. This report describes an important first step in gaining organized labor's acceptance of a role for solar energy in labor's future.

This report was prepared by Rob Livingston and Dana Moran of the SERI Technology Commercialization Division and is based upon material submitted by Herrick S. Roth and Ed Porkorney, of Herrick Roth Associates, Inc., prime contractor to SERI for material contained in this report.

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Market Development Branch

Approved for:

SOLAR ENERGY RESEARCH INSTITUTE

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TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd)

ABSTRACT

This report focuses on the question of how the Solar Energy Research Institute and the Department of Energy can work to increase the role of trade unions as producers, installers, and consumers of solar energy technology. It provides an overview and understanding of the skills and jurisdictions of organized labor and how this community might best prepare itself for the transition to working with and using solar technologies. It further discusses the new growing market for the skills of the manufacturing and construction crafts as well as the areas in which specific unions might have the greatest impact on the commercialization of solar technologies. The report includes a summary of the National Labor Leadership Workshop on Solar Technology (June 1978) and provides a basis for continued communication with this most important and influential part of the working and consuming public.

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SECTION 1.0

INTRODUCTORY SUMMARY

This report describes a labor community ready to move in the area of alternative energy sources. That community is cooperative, willing to learn, and ready to accept informed assistance from SERI. To provide personal contact on an informal basis between labor leaders and SERI representatives, a National Labor Leadership Workshop was sponsored by SERI and hosted by Robert Georgine, President of the AFL-CIO Building and Construction Trades Department on June 9, 1978, at the George F. Meany Labor Studies Center in Washington, D.C. This provided an excellent forum for labor leaders representing 13 International Unions to meet with officials of SERI and the U.S. Department of Energy (DOE) to discuss the role and implications of organized labor's involvement in the developing of solar technologies and how SERI and the Regional Solar Energy Offices can best address itself to working with trade unions as producers, installers and consumers of solar technology. (The detailed overview of the workshop can be found in Appendix A.) During the course of this project SERI sought to develop channels of communication with the national unions by:

- identifying and communicating with key national and state union officials;
- conducting a national workshop that included high-level participants from the Department of Energy (DOE), SERI, and labor;
- identifying (through surveys and research) the labor programs, policies, organizational structure, and other matters of concern of which energy officials ought to be cognizant;
- conducting in-depth interviews with union leaders to determine the relationship of the given union to solar technology as well as the degree to which the union might have a stake in a solar energy future;
- organizing prototype regional conferences aimed at bringing regional solar energy centers together with regional or state representatives of area building and construction trade councils;
- laying out a strategy by which SERI could continue to foster effective relations with the labor community making that community a working partner in SERI's future efforts; and
- developing a comprehensive report of the work of the project as well as a compendium of labor leaders contacted so that SERI and DOE can continue to build on the base begun by the project.

In his remarks to the participants at the National Labor Workshop, Paul Rappaport, Director of SERI, indicated his pleasure at the direct contact with the unions which the workshop afforded. He emphasized that SERI is a catalyst, not a policy setter. The industry, unions, and other interested

parties should formulate and set standards. To the extent that SERI is a catalyst, the workshop will be a step toward looking into the future.

At the conclusion of the conference Dr. Rappaport summed up the conference proceedings by indicating that many excellent ideas and suggestions had surfaced during the course of the workshop. These included:

- that solar energy products and solar energy installations should be kept as simple as possible, and should be presented clearly and succinctly;
- that solar energy installation and service should be done by skilled craftspeople to increase reliability;
- that good standards should be promulgated by the industry with input from labor rather than dictated by the government;
- that the government should give consideration to providing some funding for the solarizing of labor training facilities;
- that any jurisdictional disputes between or among the various trades will be worked out;
- that the matter of training is important, and that SERI will provide information, concepts, course materials, and other material that unions consider helpful to their training programs; and
- that SERI should continue open and candid discussions with organized labor including fostering communications between trade unions and the Regional Solar Energy Centers which have been established.

Several of the key labor points of view and recommendations that appeared to have some shared basis among the participants at the June 9 workshop can be summarized as follows. These views appear in greater detail later in the text covering the proceedings of the National Labor Workshop.

- Labor appreciates the early attention being paid by SERI to its potential role in solar energy, and looks forward to further cooperative relations with SERI;
- Labor is interested in being kept apprised of developments in solar energy and may be willing to use its communication links to its rank-and-file members to disseminate information about solar alternatives;
- Labor believes that governmental efforts in the training field are ignoring the fact that labor-trained craftspeople already posses the basic skills required for the solar technology field, and that any additional training needed is a relatively minor increment;
- Labor is concerned that the essential simplicity of solar energy is not reflected in instruction manuals, standards, and specifications, with the result that consumers may be frightened off by what they view as a complex and mysterious product;

- Labor does not appear unduly concerned about actual or potential jurisdictional problems among unions as such problems might impact upon their work in solar energy;

- Labor welcomes information from SERI on solar energy but it also wants input into SERI's future (e.g., as in the case of a representative from labor on SERI's advisory groups); and

- Labor is willing to help develop a viable solar industry.

Labor's recommendations to DOE and SERI at the National Labor Workshop consisted principally of the following:

- the establishment of a labor representative or labor advisory committee to SERI and or DOE on policy issues that may effect the labor community;

- close and continuing ties with the Regional Solar Energy Centers;

- publications from DOE, SERI, and the Regional Solar Energy Centers to labor discussing issues of interest to the labor community;

- provision of input as requested to the National Labor Unions at their National Conventions held each year; and

- development and maintenance by SERI, DOE and labor of close and continuing ties with the Citizen/Labor Energy Coalition.

One of the principal findings during the course of this project is that while actual labor experience has been rather limited and generally confined to a few key unions, interest among virtually all the trades that might potentially benefit is extremely high. There is general awareness and a concern that America's dependence on fossil fuels will be reduced and that other energy sources must begin to assume a larger role. Union leadership appears aware that one such source is solar technology; this new technology poses the possible promise of the creation of jobs as well as a partial solution to the energy crisis.

The project staff met personally with one or more national leaders of 18 international unions as part of this project. The purpose of these initial personal meetings was to apprise the labor leaders of SERI's operations and objectives and to probe the interest and understanding of Labor's leadership as it related to solar energy relative to solar energy.

In addition, return visits and interviews were conducted following the completion of the leadership workshop which were aimed at examining the structure of the union as well as the union's interest in and relationship to a possible solar energy future. Field visits were made with the chief officers of 22 building and construction trades councils in 18 states. These onsite discussions with regional labor leaders provided SERI an opportunity to extend its contacts to the grassroots level while also permitting SERI to examine significant differences between the national, state, and local leadership.

Below is a listing of the unions with which discussions have been held as well as a listing of the states and numbers of building and construction trades councils (BCTC's) visited. In addition, Appendix B provides the titles and addresses of their key personnel.

Table 1-1. INTERNATIONAL UNIONS CONTACTED

Boilermakers	Operating Engineers
Carpenters	Painters & Glazers
Cement Masons	Plumbers & Fitters (UA)
IBEW (Electrical Workers)	Roofers
Insulators	Sheet Metal Workers
Iron Workers	Steelworkers
Laborers	Teamsters
Machinists	UAW (Auto Workers)
Oil, Chemical & Atomic Workers	Wood, Wire & Metal Lathers

Table 1-2. STATES/NUMBERS OF BUILDING AND CONSTRUCTION TRADE COUNCILS VISITED

Arizona (2)	Michigan (1)
California (1)	Minnesota (2)
Colorado (1)	New Jersey (1)
Connecticut (1)	New York (1)
Delaware (1)	Oregon (1)
Florida (1)	Pennsylvania (1)
Georgia (1)	Rhode Island (1)
Maine (1)	Texas (2)
Massachusetts (1)	Washington (2)

In general, the process developed to date has been a successful one and project efforts are beginning to bear fruit. As an example, one need only look at the in-depth analysis of the Sheet Metal Workers International Association (SMWIA). Further evidence of this on the part of Sheet Metal Workers is revealed in a speech by Edward Carlough, President of the union, to the Solar Energy Industries Association (SEIA) on October 4, 1978. In that speech Mr. Carlough made a significant commitment on behalf of his union to solar technology--and to the integrity of workmanship in this union. The Sheet Metal Workers are guaranteeing the workmanship of any solar installation performed by their union members. The applicable portion of Mr. Carlough's speech appears below:

> The Sheet Metal Workers International Assocation will guarantee the workmanship of any solar installation in any residence--either new work or retrofitted work--that is performed by union workers employed under a collective bargaining agreement with a sheet metal and air conditioning contractor.
>
> If any residential solar customer feels that their installation has received unsatisfactory, inferior, or shoddy workmanship, he may call our international union, and we will send a trained official to inspect the job and have the problem areas corrected. If this work is necessary, it will be done free of any charge to the customer. A customer need only call the Solar Energy Department of the Sheet Metal Workers, and we will assign a person to inspect that job and seek to correct it. The telephone number in Washington is (202) 296-5880.
>
> I know of no such guarantee by any other organization or company in the solar field. It is Sheet Metal's way of underwriting our belief that the only way to get a good solar heating job is do that job with union people. In that way we can drive out the fly-by-night artists from the solar heating and cooling industry; we can reassure the public that they are getting the best possible work; and we can increase consumer receptivity to the challenge of installing solar air systems for heating and cooling.
>
> We are committed to solar. Sheet Metal Workers believe it has a great future. Even more important, we believe it has a great present, and we should be doing more solar work not only in the utopian years ahead--as some contractors suggest--but today. Solar is now. And the best solar is union solar.*

The focus of SERI's efforts thus far has been communication. The conference recommendations stressed heavily how vital are communication ties between SERI - and the labor community, and how these channels of communication may be better built, maintained, and strengthened. Whatever the format, continued communcation with the union community is essential: Not only will that community play a significant role in the production, distribution, installation, and maintenance of solar technology, but the community represents over 20 million Americans who have become a prime target for consumer utilization of solar products.

*Mr. Edward J. Carlough, General President, Sheet Metal Workers, National Labor Leadership Workshop on Solar Technologies, June 9, 1978, George F. Meany Labor Studies Center, Washington, D.C.

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SECTION 2.0

GENERAL EVALUATION OF NATIONAL LABOR LEADERSHIP AND PLANNING FOR WORKSHOPS

Judging from comments received from labor leaders both at the June 9 "Workshop on Solar Technology" and from information gained through followup telephone conversations with select participants, the workshop succeeded in accomplishing its principal purpose: to bring labor leaders, SERI, and DOE together in an informal effort to lay a communication basis for future cooperation in the solar energy field.

Feedback from labor leadership has been particularly positive among those unions which have been most deeply involved in--or are actively seeking to become deeply involved in--solar energy. They include the Sheet Metal Workers, the Plumbers and Pipe Fitters, the Carpenters, and the IBEW; equally positive reaction was received from the Laborers and the United Auto Workers (UAW).

Labor participants contacted about their evaluation of the workshop pointed to four elements that they considered highly positive:

- The workshop was initiated by a quasi-governmental entity on its own initiative rather than being forced on initiators by outside pressure;
- The workshop was open and informal and permitted free exchange rather than the tendency toward conferences where the guest speaker "speaks at" the rest of the participants;
- The workshop brought various building trades together in a positive spirit and atmosphere; and
- The workshop left participants with a positive image of SERI thus enhancing the interest in solar technology among labor participants.

An indication of the positive feeling of participants toward the workshop was demonstrated in the following in-depth interviews with labor leaders. The positive response among labor leaders to holding such meetings implies a willingness for further cooperation with SERI.

Following the national Labor Leadership Workshop at the George Meany Center in June 1978, SERI proceeded to work with the Regional Centers in sponsorship of prototype workshops and seminars in regional settings. Such workshops bring representatives of Regional Solar Energy Centers together with local, state, and regional labor leaders. Representatives of the international unions also participate where the skill areas of a given top-level union official are appropriate to the substance of the workshop.

The first such workshop was sponsored principally by the Northeast Solar Energy Center which comprises ten states in the New England and Middle Atlantic area. The initial workshop involved the six New England states in the region, while a later workshop included the Middle Atlantic states. In addition, a workshop for the 12 North Central states falling within the mid-American solar energy complex took place in late 1978.

Regional Solar Energy Centers will serve as host of regional workshops. Invitations to all workshops (for the states involved) will go to each of the international unions most associated with the production, installation and distribution of solar technology; to the chief executive office of each AFL-CIO state central body; and to the chief officers of related building and construction trade councils.

In the several dozen onsite visits to state central bodies and to related building and construction trades councils, there existed almost uniform agreement among union representatives that attempts be made to draw communication lines between local unions and solar energy representatives. The Regional Solar Energy Centers are moving to provide these communication lines.

SECTION 3.0

OVERVIEW OF UNION JURISDICTIONS

The tables which appear later in this section describe the various international unions either involved with, or potentially involved in, solar technology. The tables include the skills the union represents, and the solar technology to which that union might relate.

Solar Energy Research Institute personnel visited the labor leaders to determine their activities and attitudes in two major areas:

- actual and potential jurisdictional disputes between and among unions in the area of solar construction and installation; and
- labor training programs, plans, and needs as they relate to solar technology.

With respect to the first area--that of jurisdictional disputes--SERI ascertained that only minor disputes have occurred to date. The Sheet Metal Workers and the Plumbers and Fitters (the two principal unions involved with solar energy thus far) have a provisional international agreement for respective cooperation in the field of solar installation. So far, the agreement has operated successfully to maintain harmony between the two unions' efforts in solar energy.

The absence of jurisdictional disputes at present may be more a function of the fact that few unions have yet to get deeply involved in solar energy. It could well be that some painful jurisdictional disputes may occur as solar technology is developed, commercialized, and expanded across the various solar energy alternatives.

Concerning possible jurisdictional difficulties, the early communications established with the unions place SERI in a position to spot such potential problems before they become a major obstacle to solar energy development. SERI cannot and should not seek to solve jurisdictional disputes among unions; discussions with labor leaders have already drawn the attention of the unions to such potential disputes in the solar energy field. Unlike the normal pattern in their relationship with new technologies, the various unions have had the opportunity to address the jurisdictional question before labor has produced and installed the new technology.

Only the Sheet Metal Workers have established sophisticated training programs for apprentices and journeymen which specifically focus on the additional skills required for solar installation. Yet at the national workshop, the various other unions involved with solar energy expressed interest in incorporating a solar technology training feature. Since labor unions believe that present solar technology draws principally upon skills which trained union workers already possess, and since only minor additional training is needed, none of the unions--the Plumbers and Fitters, Carpenters, Laborers, IBEW--expressed any concern about the capability of their union to incorporate appropriate training mechanisms for solar energy.

The accompanying tables display the general jurisdiction and the skill areas of the various unions.

Over 100 selected building and construction trade councils across the nation were surveyed to provide some indication of the extent to which solar activity has taken place under the aegis of building and construction trades. Responses from the survey were combined with onsite visits to 18 states and 22 councils to produce a composite survey of activity levels on solar technology among the country's building and construction trade councils.

The survey of the building trades councils provides empirical evidence for what one might intuitively expect would be the case: that solar development is only beginning to affect the energy landscape, and that labor--both organized and unorganized--must address the needs of the new energy force in the not-too-distant future.

The results of the survey of the building and construction trades councils are displayed as follows:

Table 3-1. OVERVIEW OF UNION JURISDICTIONS SKILLS, SIZE, AND LEGAL COVERAGE

UNION	GENERAL JURISDICTION	SKILL AREAS	SIZE	LEGAL COVERAGE
Asbestos Workers	Construction Insulation	Building Craft Insulators (Packaged and Forced Air)	Under 50,000	NLRA
Auto Workers (JAW) --(Also, Aerospace and Agricultural Implement Workers)	Auto, Space and Agricultural Industrial and Small Parts Plants	All Ranges of Skills--Machine Operators and Mechanics	1,500,000	NLRA
Boilermakers (Also, Shipbuilders)	Construction and Manufacturing	Onsite and Fixed Plant Forgers and Installers	170,000	NLRA NRLA
Bricklayers	Construction Site, Generally, and Prefab Factories in a Few Instances	Brick, Mortar and Stone, and Composition Block Masons	160,000	NLRA
Carpenters	Construction, Cabinet Shop, Prefab Manufacturing and Lumber Milling	Basic Craftsmen--Framing, Drywalling (sometimes)--Cabinet Finishers, Millwrights	700,000	NLRA
Electrical, Radio and Machine Workers	Industrial, Fixed Plant Manufacturing of Electrical and Electronic Machinery and Equipment	Range of In-Plant Assembly Line Skills	300,000	NLRA
Electrical Workers, International Brotherhood of (IBEW)	Construction, Factory and Electrical and Communication Stores and Services	Journeymen Electronics--Heavy Construction, Maintenance, Outside and Inside Wiremen, Manufacturing Line Range of Skills, and Transportation Industry	880,000	NLRA NRLA
Engineers, Operating	Highway and Heavy Construction; Building Operation (Heating and Cooling)	Operate and "Site" Maintain all Heavy Job Site Equipment, Cranes, Fixed Plant Boilers and AC/Heating	420,000	NLRA

Table 3-1. (continued)

UNION	GENERAL JURISDICTION	SKILL AREAS	SIZE	LEGAL COVERAGE
Elevator Constructors	All Vertical, Horizontal and Grade Moving Lifts	Installers, Temporary and Permanent Elevators, Stairs, Walks and Guide Rails and/or Shafts	35,000+	NLRA
Glass and Ceramic Workers (Also, Glass Workers Union, American Flint)	(BOTH UNIONS) Manufacture all Types of Finished Glass Products--Including Window and Panel Glasses and Prefab Frames	Range of Assembly Line Skills from Helpers to Skilled Mechanics	Each Between 20,000 & 25,000	NLRA
Iron Workers	Bridge and Structural Iron Work	Skilled Totally--At Least Journeymen on any Job Site	100,000	NLRA
Laborers	Construction Craft Helpers; Prefab Cement, Composition Block, and Sheet Wall Manufacturing	Basic Helpers; Some Skilled Machine Operators	750,000	NLRA NRLA
Machinists and Aerospace Workers, Int. Assoc. of (IAM)	Manufacturing and Mechanical Maintenance Industries, Automotive, Air and Rail	Skilled Operators and Manufacturers of Machine Tools and New Technologies	700,000+	NLRA NRLA
Painters	Construction and Equipment Painting; Drywall Installation	Painters, Spray and Brush; Drywall Installers	183,181	NLRA
Pattern Makers	Design Metal, Glass and Plastic Patterns and Molds	Highly Skilled Prefab and Plant - Heavy Equipment Iron and Steel Designs	5,000 to 10,000	NLRA NRLA
Plasterers and Cement Masons	Site Construction and Prefab Lath and Plaster Manufacturing of Stucco, Artificial Brick, and Stone Inside and Outside Building Walls	Skilled Foundation and Floor Layers; Plant Manufacturers and Designers of Brick/Stucco/ Plaster Blocks and Walls	65,000	NLRA
Plumbers and Pipe-fitters, United Assoc. (UA)	Heating and Air Conditioning, Installation and Maintenance	Skilled Onsite Mechanics, Wet Systems	350,000	NLRA

Table 3-1. (continued)

UNION	GENERAL JURISDICTION	SKILL AREAS	SIZE	LEGAL COVERAGE
Roofers, Damp and Waterproof	Roofing, Single Family to Heavy Buildings--New and Retrofit	Skilled Roofers of all types of Roofing	50,000	NLRA
Sheet Metal Workers, International Assoc. (SMWIA)	Installation and Manufacturing, Heating and Cooling Ducts	Installers and Manufacturers of Air Ducts for Heating and Cooling, Including Pumps--Also, Maintenance of Air Heating and Cooling Units, Pumps and Timers	160,000	NLRA NRLA

COMPOSITE SURVEY - SOLAR TECHNOLOGY

AFL-CIO SELECTED BUILDING TRADES COUNCILS

(Columns arranged in order of question in survey)

Key Code to Survey:

a. State (St): State in which council located.

b. Location (Location): Council location within state.

c. Significant Degree of Solar Energy Installation (Sig): V (very significant); S (significant); and N (not significant).

d. Installation of Solar Energy Systems (Install): U (union installed); Non (nonunion installed); and Unc (uncertain).

e. Where Solar Energy is used, What Type of Construction (Type): N (new construction; R (rehab or remodeling).

f. Extent of Solar Application in S/F (single family) M/F (multifamily), SmC (small construction), and LgC (large construction): extent of application denoted by M (many), F (few), or N (none).

g. What Jurisdictions are Involved in Solar Energy Application (Jurisdiction): Carpenters (1); Electricians (2); Glaziers (3); Iron Workers (4); Plasterers (5); Plumbers (6); Pipefitters (7); Roofers (8); Sheet Metal Workers (9).

h. Jurisdictional Conflicts in Solar Technology (Con): N (no); Y (yes).

i. Is there Interest in Workshops on Solar Energy Installation (Interest): Y (yes); N (no).

TABLE 3-4

St[a]	Location[b]	Sig[c]	Install[d]	Type[e]	S/F[f]	M/F[g]	SmC[h]	LgC[i]	Jurisdictions	Con	Lic	Interest
MD	MD/DC	S	U	N	F	F	F	N	9	N	?	Y
DC												
ME	Portland	N	Both	N	F	N	F	N	1/2/4/7/9	N	N	Y
MI	Detroit	S	U	N/R	N	N	F	F	6/9	N	Y	Y
MN	*St. Paul	S	U	N/R	F	F	F	F	1/2/5/6/7/9	N	Y	Y
	*Minneapolis	S	U	N/R	F	F	F	N	1/2/5/6/7/9	N	Y	Y
	Mankato	V	U	N	F	F	F	F	2/6/7/9**	N	?	Y
	Duluth	S	U	N	F	N	N	N	2/3/6/7	N	?	Y
MO	Joplin	N	-	-	-	-	-	-	2/6/9***	M	?	Y
	Southeast	N	L	N	N	N	N	F	7/9	N	N	?
MT	Billings	N	Both	N	F	F	F	N	2/6/9	Y	Y	Y
NJ	Hadson Co	S	U	N	F	N	N	F	6/9	N	N	Y
NY	Platsburgh	N	Unc	-	-	-	-	-	-	N	?	N
OH	Toledo	S	U	N	F	F	F	N	2/3/7/9	N	?	Y
	Cleveland	N	Unc	N	F	N	N	N	2/3/4/7/9	N	?	Y
	Cincinnati	(See Ashland, Kentucky - Tri State Council)										Y

Table 3-4 (Continued)

OR	Portland	N	(See Survey Sheet)									Y
	Eugene	S	Non	N	M	N	M	N	2/3/4/6/9	Y	N	Y
SD	Sioux Falls	N	U	N	N	N	M	N	9	Y	N	Y
TX	*Austin	S	U	N	F	N	F	F	2/3/6/9****	N	N	Y
	*Houston	S	U	N	F	N	F	F	2/3/6/9	N	N	Y
	Amarillo	V	Unc	N	F	F	F	N	2/3/6/9	N	?	?
	Texarkana	N	-	-	-	-	-	-	-	-	?	N
AZ	*Phoenix	S	Both	N	F	F	N	F	All	N	Y	Y
	*Tucson	S	Both	N	F	F	N	F	2/3/5/6/9	N	N	Y
CA	Imperial	S	Non	N	F	N	N	N	6/7/9	N	Y	Y
	Fresno	S	Unc	N	F	F	F	F	2/6/9	N	Y	N
	San Mateo	S	U	N/SR	F	N	N	F	6/9	N	Y	Y
	Orange Co	N	Unc	?	?	?	?	?	?	N	?	N
	*San Diego	S	Non	N	F	F	F	N	2/5/6/9	N	Y	Y
CO	Statewide	N	U	N	F	N	F	F	All but 5	Y	?	Y
DE	*Statewide	N	Non	N	?	N	N	F	2/6/9	N	N	Y
FL	Orlando	S	U	N	F	F	F	N	6/7/9	N	N	N
	*Gulf Coast	S	Both	N/R	F	F	F	N	1/2/6/9	N	Y	Y
GA	*Atlanta	S	Both	N/R	F	F	F	F	2/3/6/9	N	N	Y
IN	Indianapolis	N	U	N	N	N	F	N	3/7/9	N	?	Y?

Table 3--4 (Continued)

IA	Des Moines	N	Both	M	N	N	F	N	7/9	N	Y	?
KY	Lexington	N	Unc	M	F	F	F	F	2/6/7/9	N	?	Y
	Ashland	N	Non	-	N	N	N	N	-	N	N	Y
	Louisville	N	Unc	F	F	?	F	N	Unc	N	?	Y
LA	Baton Rouge	N	U	N	N	N	N	F	2/3/6/8/9	N	N	N
	Shreveport	S	U	N	F	N	N	N	6/9	N	N	?
MA	*Boston	N	Both	N	F	N	N	F	6/9	N	?	Y
WA	*Seattle	V	U	N	F	F	M	F	2/3/6/9	N	N	Y
	*Spokane	S	U	N	F	F	F	F	1/2/5/6/9	N	N	Y
	Longview	N	Unc	N	F	N	N	N	1	N	?	N
	Aberdeen	N	Unc	-	N	N	N	N	-	-	?	N

* Interviews conducted personally

** Laborers

*** Asbestos Workers

**** Asbestos Workers

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SECTION 4.0

IN-DEPTH ANALYSIS OF PRINCIPAL SOLAR-RELATED UNIONS

As a result of the positive relations growing out of initial interviews and the Labor Leadership Workshop, SERI decided to continue building an effective communication base with the trade union community. A thorough understanding of the organization, structure, needs, and interests of the various unions involved or potentially involved in solar technology is necessary.

In-depth interviews were conducted with each of the unions that participated in the workshop or had an interest in further contact with SERI (even if the union did not participate in the workshop). The strategy involved conducting the in-depth interviews with the respective unions at the International Union Headquarters, if possible. The results of the interview would be combined with research on the constitutions, bylaws, and other organizational features of the union to provide an extended profile of the given union.

Interviews were conducted in International Union Headquarters in Washington, D.C., Detroit, Pittsburgh, and Denver. Interviews were kept informal and were permitted to range as widely as necessary to suit the convenience of both SERI and the respective union. General questions were suggested to the interviewee--both by mail and during the course of the interview--but they were not meant to limit the natural evolution of the interview. Generally, interviews took approximately 60 to 90 minutes to complete.

The interviewers suggested the following general areas for discussion to the participating union leaders:

- the work-force jurisdictions which your union encompasses;
- the kind(s) of employers with which your union contracts;
- the vertical level of authority which your union assumes in signing agreements--local, regional, state, and nationwide; and
- the kinds of training programs which your union supervises, initiates, holds under its own auspices, and engages in with other unions or with employers.

Specific ares of discussion were the following:

- if your union participated in the Labor Leadership Workshop on June 9, your reaction to the SERI workshop;
- your union's interest in solar technology--and its production and installation;
- a discussion of what you would expect or want from either SERI or the Department of Energy (DOE) on solar energy decisionmaking;

- how your union publications--international union and state and local councils or unions--might best be utilized with regard not only to the interests of SERI and DOE, but of the union as well;

- the kind(s) of input that you would like to make to SERI, its publication, its staff, and its operations;

- how you feel your union is now influencing or can influence energy policy in the United States with the private sector? with the Congress? with state legislatures? with the White House? with governors of states? other places? and

- what would you think your union's top priority would be if you were to emphasize how your union and SERI could best work together to achieve the goal of increasing the amount of solar technology that can or should be put to work in the United States in both the near and far distant future?

It should be noted that these discussion areas are not exhaustive of the types of questions and issues which arose during the course of interviews.

Almost unanimously, the labor leaders interviewed for this analysis were receptive to close relations with SERI. Indeed, several were enthusiastic about involvement of their craft in the solar energy field and they suggested various ways that SERI and the unions could further mutual objectives in the area of solar energy.

All of the labor leaders indicated they would be interested in receiving newsletters, press releases, results of research studies, and articles for their publications from SERI. Virtually all interviewed suggested the articles from SERI should address two types of concerns: first, the articles should speak to the union member in terms of employment prospects for the union; secondly, and in the case of such unions as the Boilermakers and Teamsters where the short-range employment prospects for their union are limited, the articles should address the members as consumers. In both cases, the articles should be clearly written, devoid of "academese," not overly extensive, and aimed toward the question of how their union members benefit either as workers or as consumers.

Those leaders interviewed indicated that they would serve as contact points between their union and SERI on such matters as meetings, receipt of articles, participation in workshops, etc. There were also several instances in which the respondent wanted materials routed through the general president of the union. In some cases, the respondent offered the names of others on the staff who would also be willing to participate in building strong relations with SERI.

Without exception, those labor leaders who had attended the June 9 Labor Leadership Workshop were favorably impressed with the meeting. Their favorable reaction was well established before the conference began. They appeared to be somewhat surprised that a quasi-governmental agency would go to such lengths--including preparatory visits--to keep the labor leadership informed, advised, and consulted.

Most of the leaders interviewed felt there might be some jurisdictional problems involved in the effort of the unions to move into solar energy. None, however, seemed to feel the obstacles would be insurmountable. Additionally, several of the respondents believed that by confronting the question of the role of the unions in solar technology in the beginning, the possibility of painless resolution of any jurisdictional questions would be enhanced.

Most of the leaders interviewed believed that solar technology has a role in the country's energy future, and that solar technology should be developed as one phase of a multidimensional approach--coal, oil shale, conventional fuels, etc.--to the energy crisis. Though respondents saw a role for solar energy and are interested in being part of that role, some felt that the development of various other types of energy sources--nuclear, for example--would create far more jobs for their members than solar energy.

Virtually all of the leaders interviewed felt their membership did not have enough data about the various energy sources and problems, and this information lack is particularly marked in the area of solar energy. There are considerable misconceptions surrounding solar energy such as the feeling that solar energy cannot be useful in cooler, cloudier climates. Union members are not aware of the feasibility, the costs, and the benefits of solar energy. Indeed, in many cases, members are not certain an energy crisis exists, believing the "crisis" has been fabricated in part to increase the prices charged by major oil companies.

Union leaders noted that most of their locals are autonomous; some noted that the locals are very autonomous and sometimes ignored direction from their national leaders. Employer agreements and negotiations are usually handled at the local level in most of the crafts, and the agreements are forwarded to the international union. Of course, where national agreements are applicable (e.g., the Alaskan Pipeline, nuclear facilities, etc.) the agreements are consumated at the organization's national level.

Virtually all of the unions agree that the needed training of their members for work in the solar technology field would be a very minor adjustment in their present training programs. Of course, the adjustments needed may take some time to incorporate into training programs where joint management-labor apprenticeship councils operate. Some of the respondents saw the possibility of SERI being helpful in providing guidance on developments in solar energy and the kinds of skills union members may need to keep abreast of the developments. The Solar Energy Research Institute would help mold any future apprenticeship training program affecting solar technology by advising the unions of the kinds of skills needed in the future.

Several union leaders interviewed indicated that their crafts were receiving grants (through CETA, Job Corps, etc.) from the federal government for training programs. The Operating Engineers have been extremely successful in getting federal funding for training and education of their members. Union leaders strongly support governmental training programs within the established apprenticeship and pre-apprencticeship programs of the various unions. Some of the leaders interviewed felt that SERI may have a role in helping to bring appropriate government officials together with union leaders to discuss how the government can spend its training money more effectively.

Several of the union leaders noted that SERI should educate the union and its members as to solar technology developments so that the union can determine if it has a role. In short, the respondents were saying that SERI now knows the union leaders and its members, but the unions and their members still are uncertain about solar energy and its future.

Several union leaders suggested alternative ways SERI might continue to build a close relationship with them. For example, almost all of those interviewed felt that SERI would be welcome to address national or regional meetings of their leaders, whether the attendees be national, regional, or local business agents. The respondents indicated they would be willing to keep SERI informed of their coming meeting dates and that normally they would have no problem in putting SERI on their meeting agenda. Other leaders indicated that SERI must impress upon union leaders the need for the country to move strongly in the solar energy area so the leadership can communicate this view to their general membership.

All of the union leaders wanted to visit SERI and tour its facilities. They wanted future workshops or seminars if such activities would cover specific themes such as solar breakthroughs that might mean additional jobs and greater energy savings by their members.

Many of the smaller crafts are not involved in the National Energy Coalition. They do not have the resources to push one energy source over another in the Congress, the White House, or in the various states. But they are active through the AFL-CIO and the Building and Construction Trades Department. In addition, almost all of the leaders expressed concern and interest in becoming more deeply involved in policy on America's energy future.

Virtually all leaders interviewed--including those who are only related to solar technology in the long range--believe their unions have a role to play in solar technology's future, whether in production, distribution, installation, or as consumers. Furthermore, they are willing to modify their training programs, organizing programs, consumer education,etc. to permit their members to become involved in solar technology. Thus, (as an example) Robert Welch of the painter's union noted that if solar technology expands rapidly and the glaziers' union increases as a portion of their total union membership the union structure would probably be changed to reflect that growth and to represent it more adequately within the union.

Most importantly, the union leaders interviewed had not received enough detailed kowledge of the costs, benefits, obstacles, and employment prospects for solar energy to know how unions might relate to solar energy or how heavily the union might become involved. As far as they were concerned they wanted full involement, but they did not know what problems they would face in the future because of that involvment.

The following section provides a listing of the unions interviewed and pertinent statements made during the course of the interview.

SECTION 5.0

UNIONS INCLUDED IN INTERVIEWS AND SELECTED COMMENTS

5.1 BOILERMAKERS, IRON SHIP BUILDERS, BLACKSMITHS, FORGERS, AND HELPERS; INTERNATIONAL BROTHERHOOD OF

Solar technology would have to become extremely sophisticated and applicable at the heavy industrial level before the union would become deeply involved. Principal focus includes utilities and steel mills.

5.2 BRICKLAYERS AND ALLIED CRAFTSMEN, INTERNATIONAL UNION OF

The belief is that this union will become heavily involved in solar technology. Cited were such factors as heat-retaining walls and their insulation potential, thermal wells within walls, solar piping which runs through masonry, technologically improved brick for passive and active solar systems, and increased use of adobe construction. Research is currently being conducted with manufacturing organizations such as the Brick Institute of America for increasing the energy potential of fireplaces. Their view is that fireplaces will become increasingly popular and demand for them will increase as the country runs short of conventional fossil fuels and as the various areas of solar development progress.

5.3 CARPENTERS AND JOINERS OF AMERICA, UNITED BROTHERHOOD OF

It is conceivable that SERI could find that the carpenters can be involved directly in solar energy installations. For instance, a large union homebuilder (Pearl Mack Construction Company) in Denver, because of the nature of the wording of the contract established between the general contractor and the subdivision developer (Montbello), used Carpenters and Iron Workers exclusively in panel installations.

5.4 ELECTRICAL, RADIO AND MACHINE WORKERS; INTERNATIONAL UNION OF (IUE)

"Our members have instructed us to focus on nuclear energy and promote the manufacture of nuclear components and the use of nuclear as the single most capable alternative available to America and the world."* The position of the union can best be defined as hard line.

5.5 ELECTRICAL WORKERS, INTERNATIONAL BROTHERHOOD OF (IBEW)

The Electricians see the possibility of building code problems as solar installations progress. For instance, even though the basic adaptions of

*George Collins, Legislative and Political Education Director.

electrical connections and installations will be somewhat alike including the installation of pumps, the interconnections with solar technology--as the Construction Department of IBEW now views it--are likely to provide problems. This results principally from inadequacies in technology that produce leakages in wet systems or heat retention problems in the case of air systems. The Electricians do not feel that this will normally disturb their work, but it may result in building code problems.

5.6 HEAT AND FROST INSULATORS AND ASBESTOS WORKERS, INTERNATIONAL ASSOCIATION OF

"The development of nuclear energy provides the best possible energy source in terms of the union's employment prospects."* They appear to feel little need for retraining additional skills which would be required by their members in solar technology. Nonunion workers have virtually all of the residential market, perhaps half of the commercial market and less than 10% of the industrial market.

5.7 LABORERS' INTERNATIONAL UNION OF NORTH AMERICA (LIUNA)

The LIUNA now has industrial, construction, and service trade contracts in everything from shipbuilding yards to the packing industry, from candle manufacturing to prestressed and precast concrete, to government contracts, and to the whole area of prefabrication related to plaster board, insulation, pumice, and aggregates associated with the cement industry. The union is heavily oriented and focused on prefabrication manufacturing. The LIUNA's greatest impact in solar technology would come if and when the technologies are mass produced.

5.8 MACHINISTS AND AEROSPACE WORKERS, INTERNATIONAL ASSOCIATION OF (IAM)

The union has recently been involved in setting up the newly established National Energy Coalition (Citizen/Labor Energy Coalition) along with six other unions. The Coalition has determined it will not get involved in the nuclear policy disputes. They intend, instead, to devote almost total effort to ". . . promoting solar energy in concrete and practical terms . . ."** before the President, the Congress, and all potentially effective elected and appointed public policy review and action centers at every level of government. They expect to lobby, testify, and research problem areas, and they intend to propose citizen action channels to reach their goals. The Machinists stand ready and willing to convert plants from their present military hardware budgets to solar hardware budgets. Solar technology provides labor intensive potential and continued job security. The Machinists adopt the same

*Joseph Zinser, Jurisdicational Director.

**William W. Winpisinger, President.

posture for themselves that the Coalition leadership has assumed: oil, gas, and coal are still the interim alternatives, but solar energy is the future.

5.9 OPERATING ENGINEERS, INTERNATIONAL UNION OF

Principally, this trade is comprised of two major skills: construction with emphasis on heavy equipment operation, and crane bulldozers; and Stationary Engineers, with emphasis on the operation of buildings, power plants, and air conditioning in major installations. It is the Stationary Engineer who operates principally at the industrial level, who will be most involved with solar technology's long-range future. To a considerable extent, their job entails the management of the energy process within large-scale enterprises and offices. The IBEW is a very large union and is dominant in many large utilities. The Operating Engineers are deeply involved with self-containing industries which have their own power plants, boilers, etc. These the Operating Engineers operate and maintain.

5.10 OPERATIVE PLASTERERS AND CEMENT MASONS, INTERNATIONAL ASSOCIATION OF

They feel that solar advances will involve cement and plaster both in passive and active systems. The union forsees involvement in solar technology principally at the industrial level. They are currently heavily involved in nuclear construction.

5.11 PAINTERS AND ALLIED TRADES, INTERNATIONAL BROTHERHOOD OF

It is the Glaziers that will become most heavily involved with solar technologies not only in the installation of the glass product but in the fabriction of solar products in shops. Painters and the other skills are only peripherally involved, if at all--as in the case where solar panels may require trim. From the selfish economic employment standpoint nuclear power houses provide far more jobs than does solar energy. Fifty to seventy-five painters would be occupied seven to eight years on work involving one nuclear powerhouse. Coatings for such facilities have become exotic and sophisticated to the point that the safety factor is also involved. Nuclear facilities also take constant maintenance, repainting, and many man-hours. Solar energy takes little or no maintenance once installed. The union is somewhat at a disadvantage in the solar technology field because the extent to which it gets work in solar technology depends largely on the extent to which their contractors sell that which is being installed.

5.12 PLUMBING AND PIPE FITTING INDUSTRY OF THE UNITED STATES AND CANADA, UNITED ASSOCIATION OF JOURNEYMEN AND APPRENTICES OF (UA)

To describe the jurisdiction, one might say that the union "does everything" in the heating and cooling or plumbing and pipe fitting industry. If skill is required, the UA is the one involved whether it is installation, construction, maintenance, or servicing. Solar technology has the potential for tremendous growth in union work and employment.

5.13 SHEET METAL WORKERS, INTERNATIONAL ASSOCIATION OF (SMWIA)

The Sheet Metal Workers have been in the forefront of the solar industry. The coordination of solar installation and solar programs is now a very top priority of the union. Sheet Metal deals primarily with air systems, both at the manufacturing and installation levels. This is where the bulk of its jurisdiction rests. Sheet Metal is anxious to get a cost-effective application of solar energy and they want to shore up their already existing product line. They have developed their own solar training programs for their journeymen. Sheet Metal feels that the private sector normally does not respond to the urgency or the need of developing solar technology. However, they feel that they and other unions do understand and can help push the importance of developing and installing solar energy as quickly as possible. The Sheet Metal Workers are flexible. They are ready for anything that happens in the world of solar technology and are flexible enough to know what they should know and when they should promote it. They have taken two major steps which provide testimony to the commitment of the union to solar energy:

- the union has been put on record as guaranteeing the workmanship of any solar installation performed by Sheet Metal Worker members, and
- the union is moving to establish a private satellite corporation (not for profit) to press for use of forced air climate control systems powered by conventional and alternate sources of energy.

5.14 STEELWORKERS OF AMERICA, UNITED (USWA)

The Steelworkers have set up their new Energy Education Project. Surveys of various segments of the membership have indicated that most workers feel that the so-called energy crisis is really phony and contrived.

The USWA is setting a precedent by converting their National Education Center for their members near Pittsburgh to solar energy, at least in part. More important , they are seeking ways and means of enticing and aiding members to "do-it-yourself" in putting solar components of some kind in individual member's homes. They feel that this will not only bring the matter home to the member, but will be an example on every block in America where a steelworker has a home and has responded to the union's national initiative.

5.15 TEAMSTERS, INTERNATIONAL BROTHERHOOD OF

There are some points at which it is possible that solar technology--when and if an industrial phase were reached--would affect the Teamsters in terms of jobs. Some 200,000 of the members of the union are involved in construction in some respects (e.g., construction site, concrete, drivers, haulers, and the like). But this is probably a long-range possibility.

5.16 UNITED AUTO WORKERS (UAW)

The UAW began installing solar equipment in its own facilities over four years ago. They are another principle member of the National Energy Coalition and are very active in the solar technology movement. The UAW feels that it has to have mass citizen involvement. They feel that union leaders must inevitably join their memberships with other organized groups in our society who share the concerns of the UAW on energy sources and who are willing to push hard to move the advance and use of solar technology much more rapidly. The UAW implements social action programs through Community Action Program (CAP). United Auto Workers Community Action Program is proposing a major national focus on solar technology at this time. They have long stood for definition by law of the transition from those activities of government that are not productive to those activities that are productive--from military hardware to productive (clean) energy products. United Auto Workers/Community Action Programs give direct personal and financial support to solar action and solar lobbying through the Center for Study of Renewable Resources. One of the UAW's four legislative priorities is activating the use of solar technologies.

5.17 UNITED SLATE, TILE AND COMPOSITION ROOFERS, DAMP AND WATERPROOF WORKERS ASSOCIATION

Most residential work is nonunion, consequently they are heavily involved in the industrial and commercial areas. A great deal of their work is involved in upgrading existing roofs as well as in new construction. Solar energy can be viewed as either providing additional work or eliminating work altogether. If the required roof area were reduced by the addition of collector panels, then there would be a detrimental effect on employment. However, if the roof area were increased, as in the case of a saw-toothed configuration--which many commercial and industrial facilities are leaning toward--then there would be the very real possibility of tremendous growth and additional work and employment opportunities. In addition, the Roofers can provide reflective or absorbent coatings on roofs for additional solar gain. This area would conceivably be another very large growth area for the Roofers.

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APPENDIX A

NATIONAL LABOR LEADERSHIP WORKSHOP OVERVIEW

OPENING STATEMENTS OF WORKSHOP

President Georgine opened the workshop with a welcome followed by introductory remarks by Secretary Beattie. Secretary Beattie stressed the desire of DOE and of SERI to foster good relations with organized labor in America's effort to cope with the energy challenge. He indicated that labor unions represent some 22,000,000 workers and their families; both DOE and SERI want to reach out to them. Secretary Beattie also explained that preliminary analysis suggests the potential creation of at least 150,000 jobs per year by solar and other energy alternatives by the mid-1980s.

The workshop, moderated by Herrick S. Roth, President of Herrick S. Roth Associates, Denver, looked at a series of concerns in an effort to illuminate the crucial question: "How can SERI and DOE best work with trade unions in the production, marketing, and installation of solar technology?" Roth indicated that in addition to the Building and Construction Trades invited to the workshop, the UAW, the Machinists, and the Steel Workers had been invited because of their concern about future alternative energy technologies.

The workshop discussion began with Walter Cosel (Solar Consultant, Sheet Metal Workers) delivering a statement on behalf of the union. Cosel explained that in the view of the Sheet Metal Workers, the Federal Government could spend its money more effectively by placing simple solar energy devices in buildings like libraries where people can see them. He exemplified the low visibility problem with the solarized Denver Bus Garage which serves the Regional Transportation District (RTD). Few if any people know it exists because of its location.

He criticized the Federal Government for failing to make solar systems--and the discussion of those systems--simple. Solar energy systems are not complicated; they are not a large departure from the skills needed for the conventional heating, air conditioning and ventilation (HVAC) industry. He noted that solar technology must have a backup conventional system which can supply all energy needs.

Referring to his belief that government and scholars have made solar technology far more complicated than necessary, he mentioned a 6th grade class in Boulder, Colorado which has built a solar device that actually works. The public has been duped into thinking solar technology is extremely complex. The image of complexity has kept unions and consumers out of the solar technology area. Cosel strongly suggested that those involved with solar technology should use the language of the installer in their solar energy equipment instructions. Manufacturers can provide this instruction.

He recommended that SERI appoint a labor representative to its highest advisory body having major input in policy formation within SERI. The labor representative should be picked by the unions. In addition, the Federal Government should focus funds to help solarize labor's training facilities and

to help fund labor's training programs. Such expenditures give solar technology larger public visibility.

Unions such as the Sheet Metal Workers already have a four-year training program for their workers. To include skills designed for solar technology is simply a small addition to their ongoing training programs. "The main objective of the unions," asserted Cosel, "is to create an industry. Then we can resolve any problems or disputes growing out of the development of that industry." But he warned that if President Carter's goal of having 2.5 million homes with solar energy by 1985 is to be achieved, the industry and unions must take chances.

To a considerable extent, his extended statement set the tone and groundwork for much of the remainder of the workshop. Many of the themes touched upon by Cosel were discussed at greater length as the workshop proceeded.

LABOR JURISDICTIONS

The participants were asked if there are any present or foreseeable jurisdictional questions which might impede the ability of the trade unions to enter the solar technology area. Addressing the jurisdictional question, President Georgine indicated that there are some major myths surrounding the Building and Construction Trades. One of those myths is that unions are not involved in the homebuilding industry; yet some 85% of the homes in California are union-built. Another myth involves the over-exaggeration of jurisdictional clashes in the Building and Construction Trades. These are seldom as severe as played up; they can and have been worked out reasonably.

On the matter of jurisdictions, James Shay (Painters and Allied Trades) indicated that their workers are fully capable of installing glass collectors. The jurisdictional agreement between the Sheet Metal Workers and the Plumbers and Fitters may be inappropriate since it makes no recognition of the role of the Painters and Glaziers.

The Glaziers are heavily involved in the manufacture and installation of solar energy and they do not plan to get out of it said William Duval (Painters and Allied Trades). The Carpenters, observed Jimmy Jones, have a vital interest in solar technology development and in jurisdictional questions. Carpenters and their apprentices are trained to do framework, and they are ready to install solar energy today.

Richard Cox noted that if people are going to accept solar energy it must be competitively priced and skillfully installed. Union leadership should cooperate among the several trades to bring the union movement into alternative energy sources. Unions, industry, and government must create an industry. Solar energy was man's natural energy in early civilization, and now we have come full circle to the point where we must return to solar energy. The conference is a positive move toward the various groups working together. But the cost factor is the main consideration because as a consumer he and others must look at the price tag.

Speaking from the viewpoint of the laborers, Marrion Parsons recalled that when modular housing came to the front, there were no conferences beforehand among the trades and the industry. Instead, there was just competition on an industrial basis. It would be advantageous if the general presidents of the several trade unions all met and worked out jurisdictional questions prior to deep involvement in another new technology. The general presidents are doing this now to a far greater extent.

Far more significant than jurisdictional questions, according to Allyn Paramenter (Plumbers and Fitters), in the development of solar energy is the rehabilitation of existing homes. "Rehab" and retrofit may well be myths. People may not be willing to pay $8,000 + to add solar energy to their present conventional system. Therefore, it may be a misconception to think there are billions of dollars worth of work and jobs in the solar retrofit of homes. Retrofit does not appear to be a major market, and this constitutes the central problem facing solar technology. Because of the mobility of our population, the investment in retrofit may not be viewed as one which can reasonably be returned.

On the matter of jurisdictions and installation, Rob Livingston (SERI) asked if unions have problems with manufacturers wanting to install their own products. Parker (IBEW) indicated his union has agreements with manufacturers. The same holds true for the Painters and the Laborers.

Reflecting what appeared to be the general consensus among labor participants concerning jurisdictional disputes, Shay (Painters) declared that SERI cannot solve labor's jurisdictional problems. But SERI can provide guidance, advice, and input into labor's role within the developing solar energy field.

APPRENTICE AND JOURNEYMEN TRAINING

David Harrington (Sheet Metal Workers) contended that for those persons already trained in the trades, as with the Sheet Metal Workers, a small number of hours added to an apprentice program or a refresher course for journeymen is sufficient. At present, Harrington explained, the Sheet Metal Workers have nine hours of solar training in their four-year apprenticeship program.

Parsons (Laborers) noted that all of the trades present in the workshop essentially agree. They find they can train their people in eight hours or so. All of the trades are looking at the same cluster of skills.

Paramenter (Plumbers and Fitters) agreed, pointing out that in their training program the little extra training which would be needed for apprentices can be easily done. On-the-job training and attitudes are the key; they are supplemented by classroom instruction. But most of the training is done on the job.

But Harrington also warned that one cannot simply take a person off the street and train him in two days for solar installation. There does not exist a basis to justify this since the four years of training which all Sheet Metal apprentices receive is missing. The worker installing solar equipment has to come from within the union movement or union infrastructure. Otherwise, a

brief training program is inappropriate. In fact, the toughest task is the training of instructors.

Describing the training program of the Plumbers and Fitters (UA), Paramenter said that there are about 30,000 apprentices in the UA with some 1,200 to 1,500 instructors brought together annually for training at Purdue University. The faculty of about 160 at Purdue comes equally from the industry (such as Honeywell), from the UA, and from the Purdue faculty. A similar program is carried on by the Sheet Metal Workers at Ohio State.

Generally apprentices are interested and want to learn as a result of the economic incentive. But one must exercise care in constructing the training program lest it be boring to journeymen. His union would invite SERI to help the union in its training of apprentices. The union will provide a training program or a training package, since the unions already have that. But SERI can offer guidance and assistance in adapting a training program to solar energy.

Throughout the workshop, labor participants stressed that faulty installation--a distinct possibility when unskilled labor is used--is a central variable in the degree to which consumers accept solar devices. Responding to the question of what unions are doing to hold down faulty installation, Shay (Painters) answered that his union had no evidence of faulty installation from union installers. Similarily, Harrington (Sheet Metal Workers) indicated that his union had no evidence of this possibility simply because there has been no study on the extent of faulty installation by union members. Thus, the union does not know whether faulty installation is by union or nonunion installers.

Responding to George Morgan's (SERI) question as to whether unions have installed solar technology on their own halls, meeting rooms, and facilities, John Yolton (UAW) said that the UAW has done so in several instances, including an olympic size swimming pool and other facilities such as a UAW Education Center. Many thousands of members and their families go through these solar facilities. The UAW's experiences with solar energy have been encouraging. In addition, the Auto Workers were very active in Sun Day. Youlton concluded his remarks by suggesting that a feasibility study ought to be done on all government buildings in terms of energy costs/benefits. If done for federal, state, and local governmental buildings it would hopefully create the necessary demand to cause the mass-production ball to start rolling.

Questioning the DOE approach to installation and training of installers, Robert G. Welch (Painters and Allied Trades) recalled that the Building and Construction Trades were the hardest hit by the most recent recession. It seems to be a contradiction that the federal government is duplicating labor's efforts to train unskilled workers in technology and wasting millions in doing it. Instead of the federal government giving money to states for CETA (which is basically nonunion political patronage) the money should go to union training and jobs.

Duval (Painters and Allied Trades) wondered whether our main interest should be energy conservation--that is, to save energy through use of solar technology--or should it be to put unemployed people to work? If this is

true, the solar industry could be ruined. Union workers are already trained and skilled for the installation of solar devices, and many of these workers are unemployed. If DOE were to use them, rather than attempting to quickly train the unskilled for work in the solar field, the solar industry would be advanced. Illustrating the point, Cosel (Sheet Metal) said that in April 1978, he had been approached by DOE representatves to set up a "quickie" solar course to teach people off-the-street about solar installation.

To these comments, Lawnie Taylor (DOE) responded that the central thrust is "economic development." Energy conservation is part of that and solar energy is one of the vehicles. But economic development is the key, and unskilled poor in urban cities are the focus.

THE VARIOUS SOLAR ALTERNATIVES

Moving from the discussion of solar heating and cooling, the participants briefly discussed other solar alternatives. Michael Collins (Operating Engineers) observed that the interest of his union members lies with larger installations. He noted that the union is very interested in solar energy as it becomes developed for central solar facilities, and that communication in meetings such as the workshop is very beneficial for that purpose.

Endorsing this view, Vincent O'Reilly (IBEW) indicated that some projects have been developed experimentally along the line of central facilities with IBEW work in New Mexico and California. Basically, they involve the concentration of the sun's rays on a boiler. O'Reilly viewed the effort as having good possibilities. Still addressing central facilities, Henry Gertz (Boilermakers) indicated that his people are caught in-between. They know that solar central facilities may well come, but they are not yet certain what to do about it.

Commenting on the various solar alternatives, Paul Rappaport (SERI) explained that SERI is interested in all phases of solar technology. That includes central facilities, photovoltaics, wind, biomass, geothermal, and other aspects of solar technology. In addition, SERI has a program aimed at universities and education; is starting a solar energy data collection bank system; already has a technology commercialization and marketing section; and is interested in international objectives including joint foreign programs, foreign markets, and other international possibilities.

President Edward Carlough (Sheet Metal Workers) offered the observation that there is a large rural market for solar energy. He thinks that there is sufficient space and less worry about aesthetics in rural areas. In Carlough's opinion, SERI should look at the agricultural and rural application of solar energy particularly the matter of process heat for the agricultural industry.

LABOR/SERI COMMUNICATIONS

Moving to the theme of communication with unions, Dana Moran suggested that a way should be found to inform organized labor of what is happening with all alternate energy technologies. For example, Moran observed that a column or article on solar technology in union publications would be very useful. In addition, the message could be tailored to each jurisdication so that it would be of maximum utility to the reader. In this way, SERI, the Regional Solar Centers, and the unions could use existing channels of communication for disseminating data and information.

Union representatives reacted favorably to Moran's suggestion that union publications be used as a communications vehicle between SERI and labor's rank-and-file members. Picking up the communication theme, Cosel (Sheet Metal Workers) reiterated his earlier recommendation that someone representing labor and selected by labor be on an advisory board or body at the higher echelons of SERI to participate in policymaking and to keep labor informed. To this recommendation, Secretary Beattie (DOE) also suggested that the trade unions lobby governors of the states to put labor people on governing boards involving solar technology in the various states and regions.

On the matter of communication, Cox (Carpenters) noted that in terms of communicating with the trades, international trade papers would provide SERI space for getting their message across. All unions have some responsibility--whatever their different interests--to help build the solar industry and to help SERI get its message across would be one way to do so.

Illustrating labor's desire to participate, President Carlough (Sheet Metal Workers) related an anecdote about the U.S. Senator who admonished former President Lyndon B. Johnson with the comment, "Just once I would like to be in on the takeoff instead of just at the crash landing." This, President Carlough indicated, is how labor often feels and why such activities as a communication workshop are useful. Carlough noted that though different unions have different interests, there is not as much fragmentation and conflict as is commonly assumed. He further advised that there is no such thing as "quickie" training, whether it is a plumber or any other trade. In that direction, he explained, lies disaster. President Carlough suggested that labor wants input into SERI at an early point, and the trades want SERI input into labor in the same fashion.

LICENSING AND STANDARDS

Turning to the question of licensing and standards, Parker (IBEW) explained that electricians invariably have codes from state and local government. National electrical codes pertain to virtually any kind of electric installation, whether it be solar or any other. Parker would like to see the solar industry set standards.

Morgan (SERI) pointed to Florida legislation which requires licensing of solar energy installers. Harrington (Sheet Metal Workers) advised that no separate solar licensing is needed. Existing licensing--that is, the present HVAC system of licensing individuals--can also be sufficient for solar technology, once it is required that those licensed be competent in solar energy installation. Solar technology, after all, is just an extension of HVAC skills. All that is necessary is to test in such a fashion as to giving a solar dimension to an HVAC license.

Secretary Beattie (DOE) observed that there are really two matters at issue: first, standards have to do with the quality of the equipment, while second , codes have to do with work performance and what happens when the equipment is put on something (i.e., installation). DOE is working on this; but DOE will not dictate standards and codes. DOE is, however, moving to accredit testing laboratories to look at equipment and say which solar collectors are acceptable in terms of meeting certain criteria. In addition, code writing groups (such as NCSBCS, BOCA, etc.) are meeting under DOE aegis. Most of these groups feel codes are needed for solar energy. DOE has to get feedback from unions to find out what they think about standards and codes.

In commenting about codes and standards, Yolton (UAW) warned that if these codes and standards are overly restrictive, they can often serve as a barrier to a new industry. For example, the opponents of solar energy could use them to restrain and inhibit the development of solar technology.

Thinking that codes are not just "make-work," Parker (IBEW) contended that codes serve a consumer protection function. Recognizing that a balance must be reached, he was nonetheless happy to hear that the Federal Government also believes codes serve a purpose. He remarked that the Department of Housing and Urban Development (HUD) appears to be watering down codes and standards.

THE NATIONAL ENERGY COALITION

During the course of the workshop, Cosel (Sheet Metal Workers) referred to the newly created National Energy Coalition. He indicated that there are now 15 unions represented in the Coalition, and the Coalition has a "solar energy task force." Barbara Shailor (Machinist representative at the workshop, and a staff member for the task force), should be contacted regarding the work of the task force. Rappaport responded that SERI would definitely take advantage of that pipeline of communication. It was observed by the gathered participants that the task force may be the key to communication since the representation spans important and concerned unions involved in solar energy.

In speaking briefly of the Coalition, President Carlough (Sheet Metal Workers) mentioned that President William Winpisinger of the Machinists has been the moving force behind the creation of the Coalition. The Coalition is a broad-based group, spanning many unions and interested parties. The varied interests represented in the Coalition have often been at each others throats on the question of nuclear energy. Their goal is to help shape energy policy in the search for alterative energy sources. In this, their interest is common. There are 18 members on the Board of Directors, including Presidents Carlough, Winpisinger, Fraser (UAW General President), and McBride (Steel

Workers General President). Six of the eighteen Board members are union leaders.

President Carlough explained that the National Energy Coalition funds the task force on solar energy, and the unions are providing staff. The Coalition will operate in several substantive areas, including legislative (federal, state, and local) as well as in the field of consumer protection.

Table A-1: LABOR PARTICIPANTS AT WORKSHOP

Robert Georgine	President, AFL-CIO Building and Construction Trades Department
BOILERMAKERS	
Henry Gertz	Assistant Director, Construction Division
CARPENTERS	
Richard Cox	Assistant to General President
E. Jimmy Jones	Assistant to General President
Lynn Kinter	Contractor
CEMENT MASONS	
Robert J. Holton	General Secretary-Treasurer
Melvin H. Roots	Executive Vice President
James J. Boyle	Vice President
John E. Hauk	International Representative
ENGINEERS	
Al Lake	Assistant to General President
Richard Bailey	Director of Jurisdiction
Michael Collins	Assistant Director of Education and Training
IBEW	
William McBride	Assistant to the President
Vincent O'Reilly	Director, Utility Department
J. M. Parker	Director, Construction and Maintenance Department
INSULATORS	
Joseph P. Zinser	Jurisdictional Director
LABORERS	
James R. Sheets	Research Director
Marrion Parsons	Training Director
MACHINISTS	
Barbara Shailor	Energy Consultant, National Energy Coalition

Table A-1 (cont'd)

PAINTERS	
William A. Duval	General Vice President
Robert G. Welch	Special Assistant to General President
James Shay	Director of Jurisdiction
PLUMBERS AND FITTERS (UA)	
Allyn Paramenter	Director of Training
ROOFERS	
Vincent Garito	International Representative
SHEET METAL	
Edward J. Carlough	General President
Dave Harrington	Training Director
Walter Cosel	Solar Consultant
Nick Lamb	Assistant
Judy Lerner	Assistant
UAW (AUTO WORKERS)	
John Yolton	Administrative Assistant, Department of Conservation
U.S. DEPARTMENT OF ENERGY PARTICIPANTS AT WORKSHOP	
Donald Beattie	Acting Assistant Secretary for Conservation and Solar Applications (C&SA)
Lawnie Taylor	Technology Transfer, C&SA
Norman Selzner	Manpower Assessment
William Tucker	Division of Manpower
SOLAR ENERGY RESEARCH INSTITUTE PARTICIPANTS AT WORKSHOP	
Paul Rappaport	George Morgan
Joe Carlson	Helen Barker
Dana Moran	Bert Mason
Rob Livingston	Julie Riley

GEORGE MEANY CENTER FOR LABOR STUDIES--June 9, 1978

APPENDIX B

LABOR LEADER CONTACTS

During the course of this project, SERI staff has had frequent opportunity to speak with and gauge the interest of a considerable number of labor leaders--whether at the national, regional, state, or local level--on their union's present and future relationship to solar energy. Periodically, SERI has received extended lists of those labor leaders contacted so that we would be in a position to maintain ongoing relations with them.

At present, work is underway for both Northeast and Mid-American regional workshops. Planning for the workshops has led to a considerable expansion of the firm's address files of labor leaders in these regions who have expressed interest in solar energy. It can be expected that continued preparation for the workshops and the actual workshop proceedings will reveal additional names which should become a part of SERI's permanent files.

SERI is presently compiling and consolidating such lists, with completion of a total, master list expected in mid-January 1979, shortly after the Mid-American conference.

Attached in this appendix are abbreviated lists already furnished to SERI. In addition, there is a compilation of major Labor Education Program Centers around the country and principal resource persons responsible for "Labor Education and Apprenticeship-Journeymen Training Programs" in unions most affected by solar energy.

BOILERMAKERS, IRON SHIP BUILDERS, BLACKSMITHS, FORGERS AND HELPERS, INTERNATIONAL BROTHERHOOD OF

New Brotherhood Building
8th Street at State Avenue
Kansas City, Kansas 66101
(913) 371-2640

LEADERSHIP/CONTACT

Harold J. Buoy,
President

Henry Gertz,
Assistant Director
Construction Division

PUBLICATION

Boilermakers-Blacksmiths Reporter
592 New Brotherhood Building
Kansas City, Kansas 66101
(913) 371-2640
Editor: Harold J. Buoy, Assistant
Editor: Leona Nichols, Managing
Editor: Michael Wood
Monthly Newspaper: Circulation, 133,500

MEMBERSHIP

170,000

INTERVIEW CONDUCTED WITH

Henry Gertz,
Assistant Director
Construction Division

BRICKLAYERS AND ALLIED CRAFTSMEN, INTERNATIONAL UNION OF

815 Fifteenth Street, N.W.
Washington, D.C. 20005
(202) 783 3788

LEADERSHIP/CONTACT

Thomas F. Murphy,
President

Merlin Taylor,
Assistant to the
President

PUBLICATION

Journal
815 Fifteenth Street, N.W.
Washington, D.C. 20005
Editor: John T. Joyce
Circulation: 70,000

MEMBERSHIP

160,000

INTERVIEW CONDUCTED WITH

Merlin Taylor,
Assistant to the
President

CARPENTERS AND JOINERS OF AMERICA, UNITED BROTHERHOOD OF

Carpenter's Building
101 Constitution Avenue, N.W.
Washington, D.C. 20001
(202) 546-6206

LEADERSHIP/CONTACT

William Sidell,
President

Richard Cox,
Assistant to the President

E. Jimmy Jones,
Assistant to the President

Charles Allen
Asssistant Director of Training

PUBLICATION

The Carpenter
101 Constitution Avenue, N.W.
Washington, D.C. 20001
Editor: R.E. Livingston
Monthly Magazine: Circulation 700,000 +

MEMBERSHIP

700,000

INTERVIEW CONDUCTED WITH

Richard Cox,
Assistant to the President

E. Jimmy Jones,
Assistant to the President

Charles Allen,
Assistant Director of Training

ELECTRICAL, RADIO AND MACHINE WORKERS, INTERNATIONAL UNION OF (IUE)

1126 16th St., N.W.
Washington, D.C. 20036
(202) 296-1200

LEADERSHIP/CONTACT

David J. Fitzmaurice,
President

George Collins,
Legislative and Political
Education Director

PUBLICATION

IUE News
1126 16th St., N.W.
Washington, D.C. 20036
Editor: David J. Fitzmaurice
Managing Editor: Gerry Borstel
Monthly Newspaper: Circulation, 300,000 +

MEMBERSHIP

300,000

INTERVIEW CONDUCTED WITH

George Collins
Legislative and Political
Education Director

ELECTRICAL WORKERS, INTERNATIONAL BROTHERHOOD OF (IBEW)

1125 Fifteenth Street, N.W.
Washington, D.C. 20005
(202) 833-7000

LEADERSHIP/CONTACT

Charles H. Pillard,
President

William McBride,
Assistant to the President

Vincent O'Reilly,
Director, Utility Department

J. M. (Kim) Parker,
Director, Construction and
Maintenance Department

MEMBERSHIP

880,000 +

INTERVIEW CONDUCTED WITH

Vincent O'Reilly
Director, Utility Department

J. M. (Kim) Parker
Director, Construction and
Maintenance Department

PUBLICATION

IBEW Journal
1125 Fifteenth Street, N.W.
Washington, D.C. 20005
Editor: Charles H. Pillard
Managing Editor: Robert W. McAlwee
Monthly Magazine: Circulation,
1,000,000

HEAT AND FROST INSULATORS AND ASBESTOS WORKERS, INTERNATIONAL ASSOCIATION OF

505 Machinists Building
1300 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 758-2388

LEADERSHIP/CONTACT

Andrew T. Haas,
President

Joseph P. Zinser,
Jurisdictional Director

MEMBERSHIP

22,000

INTERVIEW CONDUCTED WITH

Joseph Zinser
Jurisdictional Director

IRON WORKERS, INTERNATIONAL ASSOCIATION OF BRIDGE, STRUCTURAL AND ORNAMENTAL
1750 New York Avenue, N.W.
Washington, D.C. 20006
(202) 872-1566

LEADERSHIP/CONTACT
John H. Lyons,
President

Robert McVay,
Director of Jurisdictions

PUBLICATION
The Ironworker
1750 New York Avenue, N.W.
Washington, D.C 20006
Editor: John H. Lyons
Managing Editor: Bill Lawbaugh
Monthly Magazine: Circulation, 116,277

MEMBERSHIP
100,000

LABORERS', INTERNATIONAL UNION OF NORTH AMERICA (LIUNA)
905 Sixteenth Street, N.W.
Washington, D.C. 20006
(202) 737-8320

LEADERSHIP/CONTACT
Angelo Fosco,
President

W. Bernie Reed,
Secretary-Treasurer

Joe Short,
Director of Education

Marrion A. Parsons,
Director, Laborers International Union Training Program

Lou Ellison,
Director of Industrial Contacts

James R. Sheets,
Research Director

PUBLICATION
The Laborer
905 Sixteenth Street, N.W.
Washington, D.C. 20006
Editor: Angelo Fosco
Monthly Magazine: Circulation, 600,000

MEMBERSHIP
750,000

INTERVIEW CONDUCTED WTH

W. Bernie Reed,
Secretary-Treasurer

Marrion A. Parsons,
Director, Laborers International Union Training Program

Joe Short,
Director of Education

Lou Ellison,
Director of Industrial Contracts

MACHINISTS AND AEROSPACE WORKERS, INTERNATIONAL ASSOCIATION OF (IAM)

1300 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 785-5200

LEADERSHIP/CONTACT

William W. Winpisinger,
President

Barbara Shailor,
Legislative Representative

PUBLICATION

The Machinist
1300 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 785-2525
Editor: Dean K. Ruth
Monthly Newspaper: Circulation, 754,000

MEMBERSHIP

700,000 +

INTERVIEW CONDUCTED WITH

William W. Winpisinger,
President

Barbara Shailor,
Legislative Representative

OIL, CHEMICAL AND ATOMIC WORKERS, INTERNATIONAL UNION (OCAW)

P.O. Box 2812
Denver, Colorado 80201
(303) 893-0811

LEADERSHIP/CONTACT

A. F. Crocpiron,
President

Tony Mazzocchi,
Vice-President

PUBLICATION

OCAW Union News
P.O. Box 2812
Denver, Colorado 80201
Editor: Jerry Archuleta
Monthly Magazine: Circulation, 180,000

MEMBERSHIP

200,000

OPERATING ENGINEERS, INTERNATIONAL UNION OF
1125 Seventeenth Street, N.W.
Washington, D.C. 20036
(202) 347-8560

LEADERSHIP/CONTACT
J. C. Turner,
President

Michael Collins,
Assistant Director of
Education and Training

Al Lake,
Assistant to the General President

Richard Bailey
Director of Jurisdiction

PUBLICATION
International Operating Engineer
1125 Seventeenth Street, N.W.
Washington, D.C. 20036
Editor: J. C. Turner
Monthly Magazine: Circulation,
of 336,000

MEMBERSHIP
420,000

INTERVIEW CONDUCTED WITH
Michael Collins,
Assistant Director of Education and Training

OPERATIVE PLASTERERS AND CEMENT MASONS, INTERNATIONAL ASSOCIATION OF
1125 Seventeenth Street, N.W.
Washington, D.C. 20036
(202) 393-6569

LEADERSHIP/CONTACT
Joseph T. Power,
President

James J. Boyle,
Vice-President

Melvin H. Roots,
Executive Vice-President

Robert J. Holton,
General Secretary-Treasurer

John E. Hauck,
International Representative

PUBLICATION
The Plasterer and Cement Mason
1125 Seventeenth Street, N.W.
Washington, D.C. 20036
Editor: Joseph T. Power
Monthly Magazine: Circulation,
65,000

MEMBERSHIP
100,000

INTERVIEW CONDUCTED WITH
James J. Boyle,
Vice-President

PAINTERS AND ALLIED TRADES, INTERNATIONAL BROTHERHOOD OF
United Unions Building
1750 New York Avenue, N.W.
Washington, D.C. 20006
(202) 872-1444

LEADERSHIP/CONTACT
S. Frank Raftery,
President

William A. Duval,
General Vice-President

Robert C. Welch,
Special Assistant to the General President

James Shay,
Director of Jurisdictions

PUBLICATION
Painters and Allied Trades Journal
1750 New York Avenue, N.W.
Washington, D.C. 20006
Editor: Robert J. Petersdorf
Monthly Magazine: Circulation, 200,000

MEMBERSHIP
183,181 (as of August 1, 1978)

INTERVIEW CONDUCTED WITH
Robert C. Welch
Special Assistant to the General President

PLUMBING AND PIPE FITTING INDUSTRY OF THE UNITED STATES AND CANADA, UNITED ASSOCIATION OF JOURNEYMEN AND APPRENTICES OF THE (UA)
901 Massachusetts Avenue, N.W.
Washington, D.C. 20001
(202) 628-5823

LEADERSHIP CONTACT
Martin J. Ward,
General President

Allyn Paramenter,
Director of Training

PUBLICATION
UA Journal
901 Massachusetts Avenue, N.W.
Washington, D.C. 20001
Editor: Joseph A. Walsh
Monthly Magazine: Circulation, 313,000

MEMBERSHIP
350,000

INTERVIEW CONDUCTED WITH
Allyn Parmenter,
Director of Training

SHEET METAL WORKERS, INTERNATIONAL ASSOCIATION (SMWIA)

United Unions Building
1750 New York Avenue, N.W.
Washington, D.C. 20006
(202) 296-5880

LEADERSHIP/CONTACT

Edward J. Carlough,
President

Larry Cassidy,
Assistant to the General
President

Walter J. Cosel,
Solar Consultant
Sunergy Power Ltd.
400 West Main Street
Babylon, New York 11702
(516) 587-0684

Dave Harrington,
Training Director
National Training Fund
Sheet Metal and Air Conditioning Industry
1900 L. Street, #405
Washington, D.C. 20036

PUBLICATION

Sheet Metal Workers Journal
1750 New York Avenue, N.W.
Washington, D.C. 20006
Editor: David S. Turner
Montly Magazine: Circulation,
160,000

MEMBERSHIP

160,000

INTERVIEW CONDUCTED WITH

Walter J. Cosel,
Solar Consultant

STEEL WORKERS OF AMERICA, UNITED (USWA)

Five Gateway Center
Pittsburgh, Pennsylvania 15222
(415) 562-2666

LEADERSHIP/CONTACT

Lloyd McBride,
President

Jim Smith,
Assistant to the
President

Jack Eckman,
Program Director of Political
and Legislative Action

PUBLICATION

Steel Labor
Five Gateway Center
Pittsburgh, Pennsylvania 15222
Editor: Raymond W. Pasnick
Monthly Newspaper: Circulation,
1,550,000

MEMBERSHIP
1,500,000

INTERVIEW CONDUCTED WITH
Jim Smith,
Assistant to the President

Jack Eckman,
Program Director of Political and Legislative Action

TEAMSTERS, INTERNATIONAL BROTHERHOOD OF
25 Louisiana Avenue, N.W.
Washington, D.C. 20001
(202) 624-6800

LEADERSHIP/CONTACT
Frank E. Fitzsimmons,
General President

Dave Sweeney,
Director, Office of Public Relations and Publications

PUBLICATION
The International Teamsters
Teamsters Union
Office of Public Relations and Publications
25 Louisiana Avenue, N.W.
Washington, D.C. 20001
Monthly Magazine, sent to all members--largest labor publication in world, with estimated readership of 5,000,000

MEMBERSHIP
2,000,000 +

INTERVIEW CONDUCTED WITH
Dave Sweeney,
Director, Office of Public Relations and Publications

UNITED AUTO WORKERS (UAW)
8000 E. Jefferson Avenue
Detroit, Michigan 48214
(313) 921-5291

LEADERSHIP/CONTACT
Douglas A. Fraser,
President

John Yolton,
Administrative Assistant to the Vice-President for Environmental, Energy and Consumer Affairs

PUBLICATION
Solidarity
8000 E. Jefferson Avenue
Detroit, Michigan 48214
Editor: Don Stillman
Montly Magazine: Circulation, 1,794,497

MEMBERSHIP
1,500,000

INTERVIEW CONDUCTED WITH
John Yolton,
Administrative Assistant
to the Vice-President for
Environmental, Energy and
Consumer Affairs

UNITED SLATE, TILE AND COMPOSITION ROOFERS, DAMP AND WATERPROOF WORKERS ASSOCIATION
1125 Seventeenth Street, N.W.
Washington, D.C. 20036
(202) 638-3228

LEADERSHIP/CONTACT
Roy E. Johnson,
President

Vince Garito,
International Representative

PUBLICATION
The Journeymen Roofer & Waterproofer
1125 Seventeenth Street, N.W.
Washington, D.C. 20036
Editor: Dale Zusman
Monthly Magazine: Circulation, 21,000

MEMBERSHIP
50,000

INTERVIEW CONDUCTED WITH
Joseph Bissell,
Assistant to the General President

STATE CONTACTS FOR SERI

ARIZONA

Dudley Brown, Business Manager
Phoenix Building and Construction Trades Council, AFL-CIO
1841 North 24th Street, Suite 7
Phoenix, Arizona 85008

C. W. Upchurch, Business Manager
Southern Arizona Building and Construction Trades Council
2030 E. Broadway, Suite 213
Tucson, Arizona 85719

Ivan Smith, Chairman
Walter Campbell, Chairman
Tonto Apache Tribal Council
Payson, Arizona 85541

Marvin E. Smith, Asbestos Workers
Glynn Ross, IBEW
John de Castro, IBEW
Vernon McBride, Plumbers and Fitters
Henry Olea, Plumbers and Fitters
Jim Jangula, Roofers
Pete McGhee, Plumbers and Fitters
Don Procise, Roofers

Fred Brown, Executive Director
Arizona State Commission of Solar Energy
Arizona State University
Tempe, Arizona

Steve Leneberg
Treetop Enterprises
Payson, Arizona 85541

CALIFORNIA

Colin C. Bell, Secretary and Business Manager
San Diego County Building and Construction Trades Council
3909 Centre Street, Room 212
San Diego, California

Dexter Levy, Plumbers and Fitters
Horace Sealing, Cement Masons

Gregory Maynard
Southwest Energy Management, Inc.
8290 Vickers Street, Suite B
San Diego, California 92111

COLORADO

John J. Donlon, Business Manager
Building and Construction Trades Council of Colorado
1540 Emerson Street
Denver, Colorado 80218

George Löf, Chairman of the Board
Solaron Corporation
720 South Colorado Boulevard
Denver, Colorado 80222

Darold Fox, Training Coordinator
Sheet Metal Workers Training Fund
688 Bryant Street
Denver, Colorado 80204

DELEWARE

Theodore W. Ryan, President
Wilmington Building and Construction Trades Council
1620 Wilmington Road
New Castle, Deleware 19720

FLORIDA

Morris Blake, Business Manager
Florida Gulf Coast Building and Construction Trades Council
3505 Central Avenue
Tampa, Florida 33603

GEORGIA

George Caudell, Business Manager
North Georgia Building and
Construction Trades Council
250 Tenth Street, N.E., Suite 106
Atlanta, Georgia 30309

Daniel C. Smith, Technical Staff
Director
Southern Solar Energy Center Planning
Project
Exchange Place, Suite 1250
2300 Peachford Road
Atlanta, Georgia 30338

MISSOURI

Robert Mills, Program Director
Kansas City Chapter of SMACNA
4218 Roanoke, #301
Kansas City, Missouri 64111

MASSACHUSETTS

Charles H. Burkhardt, Executive
Vice-President
New England Fuel Institute
20 Summer Street
Watertown, Massachusetts 02172

William J. Cleary, President
Massachusetts State Labor Council,
AFL-CIO
6 Beacon Street, Suite 720
Boston, Massachusetts 02108

MICHIGAN

John Girolamo, International
Organizer
Sheet Metal Workes International
Association
25444 Larkins Court
Southfield, Michigan 48075

William L. Styles, Business
Manager
Sheet Metal Workers Local 80
32700 Dequindre
Warren, Michigan 48092

MICHIGAN (cont'd)

Al Thiel, Training Director
Sheet Metal Workers Local 80 Training Center
32700 Dequindre
Warren, Michigan 48092

MINNESOTA

Donald Anderson, Director
Mid-America Solar Energy Complex
1256 Trapp Road
Egan, Minnesota 55121

Daniel W. Gustafson, Secretary-Treasurer
Minnesota AFL-CIO
175 Aurora Avenue
St. Paul, Minnesota 55103

Leonard Biunias, Business Manager
Minneapolis Building and Construction Trades Council
312 Central Avenue, Room 556
Minneapolis, Minnesota 55414

Richard C. Radman, Secretary and Business Manager
St. Paul Building and Construction Trades Council
411 Main Street
St. Paul, Minnesota 55102

OREGON

Earl B. Kirkland, Secretary
Columbia-Pacific Oregon Building and Construction Trades Council
304 Portland Labor Center
201 S.W. Arthur Street
Portland, Oregon 97201

TEXAS

Robert T. Stringer, President
Wayne Aldridge, Secretary and Business Manager
Austin Building and Construction Trades Council
400 Josephine Street
Austin, Texas 78704

LeMoine Pitman, Business Representative
Sheet Metal Workers Local 67
Route 1, Box 20 C
Spicewood, Texas 78669

M. A. (Pee Wee) Graham, Executive Secretary
Houston-Gulf Coast Building and Construction Trades Council
2704 Sutherland
Houston, Texas 77023

Robert Boyd, Plumbers and Fitters

Jackie St. Claire, President
Texas Building and Construction Trades Council
1106 Lavaca, Suite 204
Austin, Texas 78701

WASHINGTON

Glenn Arnold, Business Manager
Sheet Metal Workers
IBEW Building
2700 First Avenue
Seattle, Washington 98121

Darrel D. Grant, Secretary
Northeastern Washington-Northern Idaho Building and Construction Trades Council
102 E. Boone, Room 10
Spokane, Washington 99202

William E. Crooke, Business Manager
Seattle Building and Construction Trades Council
Suite 211, IBEW Building
2700 First Avenue
Seattle, Washington 98121

John Ober, Executive Secretary
SMACNA, Western Washington Region
1200 Westlake Drive, North
Seattle, Washington 98109

WASHINGTON, D.C.

Fred K. Hoehler, Jr.,
Executive Director
George Meany Center for Labor Studies
10000 New Hampshire Avenue
Silver Springs, Maryland 20903

Peggy Jarman, Director Sales
The Hay-Adams
Sixteenth and H Streets, N.W.
Washington, D.C. 20006

Janis Strange, Registrar
George Meany Center for Labor Studies
10000 New Hampshire Avenue
Silver Springs, Maryland 20903

LABOR EDUCATION PROGRAM CENTERS

(Courtesy of Bill Rentfro, Director; Al Wickman, Associate Director; Center for Labor Education Research, University of Colorado-- whose names may be used in any of these contacts)

University of Illinois

Ron Peters, Coordinator of Labor Programs
Institute of Labor and Industrial Relations
University of Illinois
504 E. Armory
Champaign, Illinois 61820
(217) 333-0980

Stan Rosen, Coordinator
Chicago Office, University of Illinois
Labor Programs, Institute of Labor and Industrial Relations
1315 SEO Building
P.O. Box 4348
Chicago, Illinois 60680
(312) 996-2623

University of Indiana

D. W. "Whit" Murphy, Director
Division of Labor Studies
University of Indiana
3120 N. Park
Bloomington, Indiana 47401
(812) 337-9082
(NOTE: There are four principal satellites at other university and college locations related to the higher education system of the State of Indiana but Murphy or his office can lead you to any of them including those in the South Bend, Lafayette, Indianapolis, and Evansville areas.)

University of Iowa

Mark Smith, Program Director
Labor Education Program
Industrial Relations Institute
Phillips Hall
University of Iowa
Iowa City, Iowa 52242
(319) 353-4276
(There are a number of programs that are each related to particular institutions in Michigan and all of them have excellent resources, so here are several listed.)

Michigan State University

Dale Brickner, Director
(Bob Repas, Associate Director)
Labor Program Services
School of Labor and Industrial Relations
Michigan State University
South Kedzie Hall
East Lansing, Michigan 48824
(517) 355-5070
(517) 355-2214

Northern Michigan University

Joaquin Gomez, Labor Consultant
Labor Education Programs
Bureau of Management Training and Economic Development
Division of Continuing Education
Northern Michigan University
Marquette, Michigan 49855
(906) 227-2101

Oakland University

Don Stevens, Director
(Former President Michigan AFL-CIO)
Labor Education Service
Division of Continuing Education
304 Wilson Hall
Oakland University
Rochester, Michigan 48063
(313) 377-3124

University of Michigan

(Ann Arbor and Wayne State Campuses, respectively)

Hy Kornbluhm, Codirector
Labor Studies Center
Institute of Labor and Industrial Relations
109 Museums Annex
University of Michigan
Ann Arbor, Michigan 48109
(313) 764-0492

Eugene Brook, Codirector
Labor Studies Center
Institute of Labor and Industrial Relations
Wayne State University
5475 Woodward Avenue
Detroit, Michigan 48202
(315) 577-2191

Ohio State University

Charles J. Slanicka, Director
Labor Education and Research Services
Ohio State University
1810 College Road
Columbus, Ohio 43210
(614) 422-8157
(There are three satellite offices and program centers in Ohio on other state institutional campuses or branches of Ohio State University--but Slanicka is key to the contacts.)

University of Wisconsin

Robert Ozanne, Director
School for Workers
University of Wisconsin
825 Extension Building
432 N. Lake
Madison, Wisconsin 53706
(608) 262-2111

University of Wisconsin at Milwaukee

(This is really a satellite of the School for Workers Program at Madison.)

Irving Brotslaw, Associate Director
School for Workers
University of Wisconsin at Milwaukee
929 N. Sixth Street
Milwaukee, Wisconsin 53203
(414) 224-4175

One other name should be added to this total list, inasmuch as there is now a coordinated listing of all of the apprenticeship training directors in the United States. Supposedly the list is updated from time to time. The list is maintained by:

Fred Hoehler, Director
George Meany AFL-CIO Labor Studies Center
10000 New Hampshire Avenue
Silver Springs, Maryland 20903
(301) 431-6400

NAMES OF LABOR EDUCATION AND APPRENTICESHIP-JOURNEYMEN

TRAINING PROGRAM RESOURCES PERSONS

(Especially prepared for the Mid-American Solar Energy Complex)

United Association (Plumbers and Fitters)

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