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Working Paper

Solar Technology Commercial Readiness Assessment Information Requirements

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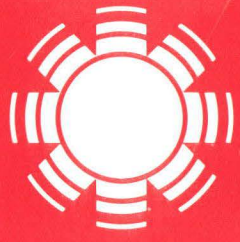

Solar Energy Research Institute
A Division of Midwest Research Institute

1536 Cole Boulevard
Golden, Colorado 80401

Operated for the
U.S. Department of Energy
under Contract No. EG-77-C-01-4042

NOTICE

SERI/SP-61-397

WORKING PAPER

SOLAR TECHNOLOGY COMMERCIAL READINESS ASSESSMENT INFORMATION REQUIREMENTS

RUSSELL HEWETT

SEPTEMBER 1979

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FOREWORD

This report specifies information/statistics needed by SERI in order to generate annual commercial readiness assessments for two solar technologies: water and space heating in buildings and central and distributive wind technologies. The information requirements defined in this report relate to requirements for which SERI's Information Systems Division and the Regional Solar Energy Centers can be the coordinators and/or collection organization.

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Approved for:

SOLAR ENERGY RESEARCH INSTITUTE

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SECTION 1.0

INTRODUCTION

1.1 BACKGROUND

As part of the ongoing Solar Technology Commercial Readiness Assessment Program, SERI's Technology Commercialization Division has developed a quantitative methodology for assessing the relative degree of commercial readiness attained by solar technologies in specific applications (e. g. central wind systems/generation of electricity by utilities, solar water heating/new single family homes -- speculative and tract construction, etc.).

The commercial readiness process -- which proceeds concurrently with solar technology commercialization -- is the process in which all of the factors and issues that figure in the commercialization evolve to the point where the market catches on and begins to grow at an increasing rate.

The SERI quantitative measure of commercial readiness is Commercial Readiness Index (CRI).CRI -- somewhat analogous to the Consumer Price Index -- is a relative measure, on an internal scale, of the progress being made in commercializing a solar technology in a specific application in competition with a specific conventional alternative. CRI measures readiness on a scale 0 - 100:

- Zero denoting no progress towards commercial readiness
- 100 denoting complete commercial readiness
- $0 < CRI < 100$ denoting relative progress towards complete commercial readiness.

Solar technology "X" in application "Y" is considered to be "close" to full commercial readiness (i.e., CRI rating of 90 or better) when:

- The governing market penetration enters the growth stage
- The economics of the solar system approach that of the conventional alternative
- Key technical/engineering barriers have been resolved
- The private sector has committed capitol to the technology and is actively marketing it
- The market infrastructure has begun to evolve

- Major institutional/legal/environmental issues have been resolved or are being addressed
- Federal RD&D expenditures are utilized predominately for market development and demonstration programs.

The equation used to compute CRI employs a Commercial Readiness Figure of Merit that is a function of seven interrelated factors:

- End user requirements (non economic)
- Producer requirements
- Solar system costs and economics
- Technology requirements
- Government initiatives
- Legal/institutional/environmental issues
- Market development.

Each of the above factors consists of one or more commercial readiness indicators. For each technology/application, the assessment methodology employs the same seven factors. However, the constituent indicators used depend upon the technology/application being assessed. For example in computing the CRI for solar water heating/new single family homes (tract construction) the factor "Market Development" included "Number of Builders Offering Solar as an Option on Standard Feature" as an indicator. This indicator does not appear under "Market Development" in the commercial readiness assessment of central wind systems for generating electricity/large utilities.

A complete description of the assessment methodology -- rationale, factors, indicators, CRI equation, and how to use the methodology -- appears in the SERI working paper Commercial Readiness Assessments: Description of Study Methodology.*

In order to exploit fully the capabilities of the assessment methodology, accurate and timely data/statistics are needed regarding the current status of each commercial readiness indicator relative to its defined goal.

1.2 OBJECTIVES

The objective of this Working Paper is to specify the annual information/statistics needed by SERI in order to compute annual CRI ratings for the following

*W. Benson and R. Hewett. Commercial Readiness Assessments: Description of Study Methodology. Solar Energy Research Institute. August 1979.

solar technology/application combinations:

- Solar water heating/new one and two family homes (tract construction)
- Solar water and space heating/new one and two family homes (tract construction)
- Solar water heating/one and two family homes retrofit market
- Central wind systems/utilities
- Distributive wind systems/rural residential applications
- Distributive wind systems/agricultural applications.

The information needs articulated in the ensuing sections focus on:

- Information needs which could be provided by SERI's Information Systems Division.
- Information needs for which the four regional solar energy centers could serve as the collection agency.
- Data/statistics not readily available to SERI in a processed or semi-processed format.

1.3 WORKING PAPER ORGANIZATION

Section 2.0 articulates information requirements for assessing the three solar water and space heating markets. Sections 3.0 and 4.0 shows information requirements for the central wind system and distributive wind system applications, respectively. Section 5.0 addresses desired characteristics of the items of information to be collected.


SERI

SECTION 2.0

INFORMATION NEEDS: SOLAR WATER AND SPACE HEATING

2.1 SOLAR TECHNOLOGY/APPLICATION DESCRIPTIONS

- Solar Water Heating/new one and two family homes (tract construction)
  - Technology: solar thermal/flat plate and evacuated tube
  - Application: water heating in new one and two family homes (tract construction)
  - Competition: gas and electric resistance water heaters
- Solar Water Heating/one and two family home retrofits
  - Technology
  - Application
  - Competition: gas and electric resistance water heaters
- Solar Water and Space Heating/new one and two family homes (tract construction)
  - Technology: solar thermal/flat plate and evacuated tube
  - Application: water and space heating in new one and two family homes (tract construction)
  - Competition: gas oil and electric resistance water and space heaters

2.2 INFORMATION NEEDS

For each of the seven commercial readiness factors, Tables 2-1 through 2-7 lists the information needed for performing assessments for the three solar water and space heating applications.

TABLE 2 - 1

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• SOLAR WATER AND SPACE HEATING

• FACTOR: END USER REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION/MARKET		
	NEW HOMES WATER HEATING	NEW HOMES WATER & SPACE HEATING	RETROFIT WATER HEATING
(1) Statistics regarding sales and resales of solar-equipped homes			
• Number of sales	X	X	X
• Value of solar-equipped home relative to comparable non-solar home			X
(2) Names and addresses of insurance companies willing to insure solar-equipped homes at same rates as non-solar homes	X	X	X

TABLE 2 - 2

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• SOLAR WATER AND SPACE HEATING

• **FACTOR:** COSTS AND ECONOMICS

INFORMATION REQUIREMENTS	APPLICATION/MARKET		
	NEW HOMES WATER HEATING	NEW HOMES WATER & SPACE HEATING	RETROFIT WATER HEATING
(1) Solar system installed cost	X	X	X
• Average value (dollars)			
• Range (dollars)			
(2) Payback periods attained by typical solar homeowners	X	X	X
• Mean value (years)			
• Range (years)			
(3) Percentage of annual load met by solar energy	X	X	X
• Mean value (percentage)			
• Range			
(4) Market penetration curve showing expected sales (number of systems) as a function of system cost and payback period	X	X	X

TABLE 2-3

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• SOLAR WATER AND SPACE HEATING

• FACTOR: PRODUCER REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION/MARKET		
	NEW HOMES WATER HEATING	NEW HOMES WATER & SPACE HEATING	RETROFIT WATER HEATING
(1) Statistics concerning individual solar equipment producers			
• Name and address	X	X	X
• Assets (dollars)	X	X	X
• Number of employees	X	X	X
• Number of franchises/dealers	X	X	X
• Annual Sales (dollars)	X	X	X
• Return on invested capital	X	X	X
(2) States implementing utility rate structures favorable to solar utilization	X	X	X
• State			
• Point of contact (agency and person)			
• Program description			
(3) Solar market potential projects			
• New homes market (number of systems)	X	X	
• Retrofit market (number of systems)			X

TABLE 2 - 4

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• SOLAR WATER AND SPACE HEATING

• FACTOR: TECHNOLOGY REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION/MARKET		
	NEW HOMES WATER HEATING	NEW HOMES WATER & SPACE HEATING	RETROFIT WATER HEATING
(1) Studies regarding long term performance of solar systems • Name and address of organization conducting the study • Study findings	X	X	X
(2) Statistics regarding long term performance of solar systems: nature and frequency of problems with respect to - Seals - Glass - Corrosion - Warpage - Collector surface degradation - Leakage - Weather-related damage	X	X	X
(3) Expected number of service calls annually to repair solar system	X	X	X

TABLE 2 - 5

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• SOLAR WATER AND SPACE HEATING

• FACTOR: GOVERNMENT INITIATIVES

INFORMATION REQUIREMENTS	APPLICATION/MARKET		
	NEW HOMES WATER HEATING	NEW HOMES WATER & SPACE HEATING	RETROFIT WATER HEATING
(1) State and local financial incentives programs for homeowners • Name of jurisdiction • Program details • Program duration	X	X	X
(2) State and local financial incentives programs for producers • Name of Jurisdiction • Program Specifics • Program Duration	X	X	X
(3) State sponsored education and outreach programs • Name of jurisdiction • Program specifics • Program funding (year-by-year) • Program duration	X	X	X

TABLE 2 - 6

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• SOLAR WATER AND SPACE HEATING

• FACTOR: LEGAL/INSTITUTIONAL/ENVIRONMENTAL ISSUES

INFORMATION REQUIREMENTS	APPLICATION/MARKET		
	NEW HOMES WATER HEATING	NEW HOMES WATER & SPACE HEATING	RETROFIT WATER HEATING
(1) State and local licensing and certification program for solar system installers • State or local entity conducting the program • Name and address of implementing agency • Program description: content • Program description: schedules and funding	X	X	X
(2) Federal state and local solar training programs for building code officials • State or local entity conducting the program • Name and address of implementing agency • Program description: content • Program description: schedules and funding	X	X	X
(3) State and local legislation and programs aimed at insuring solar access • State or local entity involved • Program or legislation description	X	X	X

TABLE 2 - 7

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• SOLAR WATER AND SPACE HEATING

• FACTOR: MARKET DEVELOPMENT

INFORMATION REQUIREMENTS	APPLICATION/MARKET		
	NEW HOMES WATER HEATING	NEW HOMES WATER & SPACE HEATING	RETROFIT WATER HEATING
(1) Solar system sales (number of systems) annually by state	X	X	X
(2) Home builders			
• Names and addresses of developers building solar-equipped homes or offer solar as an option (for each state)	X	X	
(3) Solar system financiers			
• Names and addresses of financiers offering special mortgage rates on solar equipped homes	X	X	X
• Names and addresses of financiers willing to finance solar retrofit projects			X
- Rates			
- Terms			
(4) Solar dealers/installers	X	X	X
• Names and addresses of solar dealers and/or installers in each state			

TABLE 2 - 7 (con't)

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• SOLAR WATER AND SPACE HEATING

• FACTOR: MARKET DEVELOPMENT (Con't)

INFORMATION REQUIREMENTS	APPLICATION/MARKET		
	NEW HOMES WATER HEATING	NEW HOMES WATER & SPACE HEATING	RETROFIT WATER HEATING
(5) Solar designers • Names and addresses of licensed solar A & E's in each state	X	X	X
(6) Strong, respected and active solar associations in each state • Names and addresses • Membership: number of individuals and organizations • Membership: by profession • Membership: names of participating organizations • Activities • Publications (name, address, circulation and frequency)	X	X	X

SECTION 3.0

INFORMATION NEEDS: CENTRAL WIND SYSTEMS

3.1 SOLAR TECHNOLOGY/APPLICATION DESCRIPTIONS

- Small Utilities: Public, investor-owned and cooperative electric utilities having a peak demand of 10 megawatts or less.

- Large Utilities: Public, investor-owned and cooperative electric utilities having a peak demand greater than 10 megawatts.

  - Central Wind Systems/Large utilities

    Technology: central wind systems having power ratings of at least 500 kilowatts

    Application: commercial production of electricity

    Competition: intermediate and peak load conventional generating equipment (gas turbines diesels and oil)

  - Central Wind Systems/Small utilities

    Technology: central wind systems having power ratings in the range 100 - 500 kilowatts

    Application: commercial production of electricity

    Competition: diesel generators, gas turbine generators and expensive power purchased from other utilities

3.2 INFORMATION NEEDS

For each of the seven commercial readiness factors, Tables 3-1 through 3-7 list the additional items of information needed to perform central wind commercial readiness assessments.

TABLE 3 - 1

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: END USER REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(1) Utilities engaged in wind programs (e.g. wind resource identification, engineering studies, demonstrations, etc) • Name and address of utility • Point of contact • Program description	X	X
(2) Property and casualty insurers for utilities • Names and addresses • Insurance coverage and rates	X	X
(3) Wind A & E firms • Names and addresses of utility A & E firms having wind farm experience or engaged in central WECS RD&D projects	X	X
(4) Central WECS sites • Good central WECS sites in each state - County - Geographical coordinates		

TABLE 3 - 1 (con't)

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

- CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

- FACTOR: END USER REQUIREMENTS (con't)

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(5) New power dispatch algorithms/methods that specifically address wind	X	X

TABLE 3 - 2

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: COSTS AND ECONOMICS

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(1) Utility central WECS economics requirements • Cost of energy generated by wind machines ($/KW-HR) • System installed cost acceptable to utilities ($/KW)	X	X
(2) Utility concepts regarding the complete array of hardware and other elements associated with acquiring a wind farm and expected costs • Wind machines • WECS installation • Land • Land preparation • Transmission lines • Safety systems and equipment • O & M equipment (e.g. cranes) • Controls • Power conditioning equipment • etc	X	X

TABLE 3 - 2 (con't)

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

- CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

- FACTOR: COSTS AND ECONOMICS (con't)

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(3) Processed costs and economics data from government-funded and private demonstration programs • O & M costs • etc	X	X

TABLE 3 - 3

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: PRODUCER REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(1) Central WECS manufacturers (producers of WECS having power ratings of at least 100 KW) • Names and addresses • WECS annual sales (dollars) • WECS annual sales (number of systems) • Representative customers	X	X
(2) Product liability insurers for WECS producers • Names and addresses • Policy terms and rates	X	X
(3) States implementing utility rate schedules that encourage utilities to acquire wind systems • States enacting such rate schedules • Rate schedule descriptions	X	X

TABLE 3 - 4

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: TECHNOLOGY REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(1) Central WECS technological advancements • WECS subsystems (e.g. rotors) • Materials • Etc	X	X
(2) Statistics regarding the long term performance of central wind systems • Statistics from government-funded and private demonstrations	X	X
(3) Concepts for integrating WECS and conventional generating equipment	X	X

TABLE 3 - 5

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: GOVERNMENT INITIATIVES

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(1) State and local financial incentives programs for utilities • State and/or local entity sponsoring the program • Program description • Program duration	X	X
(2) State and local financial incentives programs for WECS producers • State and/or local entity sponsoring the program • Program discription • Program duration	X	X

TABLE 3 - 6

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: LEGAL/INSTITUTIONAL/ENVIRONMENTAL ISSUES

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(1) Programs aimed at alleviating WECS-procuced television signal interference • Sponsoring element: name and address • Program description: content • Program description: funding and schedules	X	X
(2) State and local programs aimed at insuring wind access • State or local government involved • Program description	X	X
(3) State and local legislation and regulations relating to WECS safety and liability issues • State or local government involved • Description of legislation and/or regulations	X	X
(4) State and local land use legislation and regulations relating to WECS • State or local government • Description of legislation and/or regulations	X	X

TABLE 3 - 6 (con't)

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: LEGAL/INSTITUTIONAL/ENVIRONMENTAL ISSUES

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(5) State legislation and regulations governing interconnections between utilities with and without central wind systems • State • Description of legislation and/or regulations	X	X

TABLE 3 - 7

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: MARKET DEVELOPMENT

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(1) Utilities acquiring wind machines for demonstration purposes or commercial production of electricity • Name and address of utility • Description of WECS acquired (e.g. manufacturer, model, power rating, installer, etc) • Purpose of WECS	X	X
(2) State micro market studies	X	X
(3) Strong, respected and active WECS associations in each state • Name and address of association • Membership: number of individuals and organizations • Membership: by profession • Membership: names of participating organizations • Activities • Publications (name, address, circulation and frequency)	X	X

TABLE 3 - 7 (con't)

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• CENTRAL WIND SYSTEMS/LARGE AND SMALL UTILITIES

• FACTOR: MARKET DEVELOPMENT (con't)

INFORMATION REQUIREMENTS	APPLICATION/MARKET	
	LARGE UTILITIES	SMALL UTILITIES
(4) Central WECS standards programs	X	X
• Cognizant organization		
• Program description: content		
• Program description: funding and schedules		

SECTION 4.0

INFORMATION NEEDS: DISTRIBUTIVE WIND SYSTEMS

4.1 SOLAR TECHNOLOGY/APPLICATION DESCRIPTIONS

- Distributive Wind Systems/Residential
  - Technology: distributive wind systems having power ratings in the range 2 - 10 kilowatts
  - Application: electricity for residential consumption
  - Competition: electricity purchased from a utility
- Distributive Wind Systems/Agricultural
  - Technology: distributive wind systems having power ratings in the range 10 - 40 kilowatts
  - Application: electricity and heat for form applications (e.g. animal shelter heating)
  - Competition: electricity purchased from a utility and/or propane

4.2 INFORMATION NEEDS

For each of the seven commercial readiness factors, Tables 4-1 through 4-7 list the items of additional information needed to perform distributive wind commercial readiness.

TABLE 4 - 1

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

• FACTOR: END USER REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(1) Distributive WECS dealers and installers in each state • Names and addresses	X	X
(2) WECS insurers • Names and addresses of insurers offering property and liability insurance on wind machines	X	X
(3) WECS financiers • Names and addresses of financial institutions providing standard or special financing for acquiring wind machines	X	X
(4) Federal state and local programs aimed at collecting wind resource information	X	X

TABLE 4 - 2

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

• FACTOR: COSTS AND ECONMICS

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(1) Farmer and homeowner WECS economics requirements • System cost • Payback period • Market penetration curve showing expected annual sales as a function of system cost and payback period	X	X
(2) WECS installed cost (dollars/KW) • Mean value • Range	X	X
(3) Payback periods being attained by farmers and homeowners (years) • Mean value • Range	X	X

TABLE 4 - 3

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

• FACTOR: PRODUCER REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(1) Distributive WECS manufacturers (producers of WECS having power ratings in the range 2 - 40 KW) • Names and addresses • Annual sales (dollars) • Annual sales (number of systems)	X	X
(2) Product liability insurers for WECS producers • Names and addresses • Policy terms and rates	X	X
(3) States enacting utility rates schedules favorable to distributive WECS utilization • States enacting such rate schedules • Rate schedule discriptions	X	X
(4) Distributive WECS market potential statistics by region and/or state	X	X

TABLE 4 - 4

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

• FACTOR: TECHNOLOGY REQUIREMENTS

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(1) Distributive WECS technological advancements • WECS subsystems • Materials • Etc	X	X
(2) Statistics regarding the long term performance of wind machines • Mean time between failure • Mean time between maintenance • Expected useful life • Weather-related hazards/problems • Etc	X	X
(3) Expected number of annual service calls	X	X

TABLE 4 - 4 (con't)

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

• FACTOR: TECHNOLOGY REQUIREMENTS (con't)

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(4) Studies regarding distributive WECS long term performance	X	X
• Name and address of organization conducting the study		
• Study fundings		

TABLE 4 - 5

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

FACTOR: GOVERNMENT INITIATIVES

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(1) State and local financial incentives programs for farmers and homeowners • Name of jurisdiction • Program discription • Program duration	X	X
(2) State and local financial incentives programs for WECS producers • Name of jurisdiction • Program discription • Program duration	X	X
(3) Federal, state and local WECS education and outreach programs • Name of jurisdiction • Program discription • Program schedule	X	X

TABLE 4 - 6

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

- DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

- FACTOR: LEGAL/INSTITUTIONAL/ENVIRONMENTAL ISSUES

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(1) State and local zoning and land use ordinances impacting positively or negatively upon WECS utilization • Name of jurisdiction • Subject ordinances and regulations • Interpretation of ordinances and regulations	X	X
(2) State and local licensing and certification programs for distributives WECS installers • Name and address of cognizant agency • Program discription: content • Program discription: funding and schedules	X	X
(3) State legislation/regulations governing tie-ins between utilities and distributive WECS owners and buying and sell back of power • State • Legislation/regulations discription	X	X

TABLE 4 - 6 (con't)

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

- DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

- FACTOR: LEGAL/INSTITUTIONAL/ENVIRONMENTAL ISSUES

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(4) State and local regulations regarding distributive WECS safety and liability • Name of jurisdiction • Descriptions of subject regulations	X	X

TABLE 4 - 7

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

• DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

• FACTOR: MARKET DEVELOPMENT

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(1) Distributive wind system sales (number of systems) annually by state	X	X
(2) State and regional micro market studies	X	X
(3) Distributive WECS standards programs • Cognizant organization • Program description: content • Program description: funding and schedules	X	X
(4) Strong, Respected and active WECS assocations in each state or region • Name and address • Membership: number of persons and organizations • Membership: names of member organizations • Membership: by profession • Activities • Publications (name, address, circulation and frequency)	X	X

TABLE 4 - 7 (con't)

SOLAR COMMERCIAL READINESS ASSESSMENT INFORMATION NEEDS

o DISTRIBUTIVE WIND SYSTEMS/RESIDENTIAL AND AGRICULTURAL APPLICATIONS

FACTOR: MARKET DEVELOPMENT (con't)

INFORMATION REQUIREMENTS	APPLICATION / MARKET	
	RESIDENTIAL APPLICATIONS	AGRICULTURAL APPLICATIONS
(5) Agricultural associations engaged in wind programs • Name and address • Program description		X

SECTION 5.0

SUGGESTED INFORMATION COLLECTION PROCEDURES

For the information needs identified in Sections 2.0 - 4.0, SERI offers the following suggestions to facilitate collection and then utilization of the information to make readiness assessments:

- Information timeliness: All collection efforts should focus on acquiring information relating to the year for which the commercial readiness assessments are to be made. For example, although the assessments of central wind systems for 1978 were made in 1979, collection efforts should focus on the state of affairs in 1978.

- Information accuracy: for those information needs calling for enumeration of organizations having special characteristics (e.g. solar equipment dealers, etc.), an attempt should be made to identify at least 90 percent of such organizations. This allows for a 10 percent margin of error.

- In the case of information needs calling for "names and addresses" of organizations, the preferred procedure is to specify:

  - Name
  - Street address
  - City, State, zip code
  - Telephone number
  - Point of contact (name and title)

- The preferred method for cataloging "names and addresses" is by state.

- In the case of information needs asking for "state and/or local programs," the following information is desired:

  - State or local government
  - Cognizant agency (name and address)
  - Program description: content
  - Duration
  - Funding (as applicable)
  - Schedules (as applicable)
  - Cognizant Federal agency (as applicable).