SOLAR ENERGY
TECHNOLOGIES OFFICE
U.S. Department Of Energy

PORTFOLIO REVIEW
2018

SOLAR ENERGY TECHNOLOGIES OFFICE
U.S. Department Of Energy

2018 SETO Portfolio Review

Soft Costs Subprogram

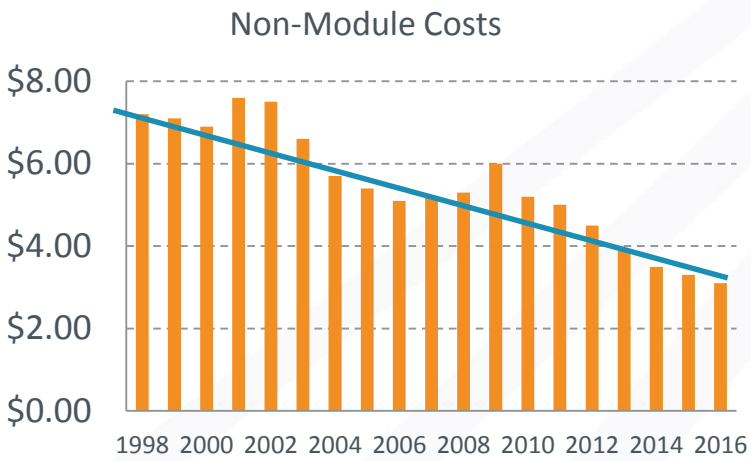
SETO Portfolio Review

February, 2018

Garrett Nilsen, Program Manager

Soft Costs are Declining (Just not as rapidly as Module Costs)

Setting and meeting ambitious goals



Between 2008 & 2016

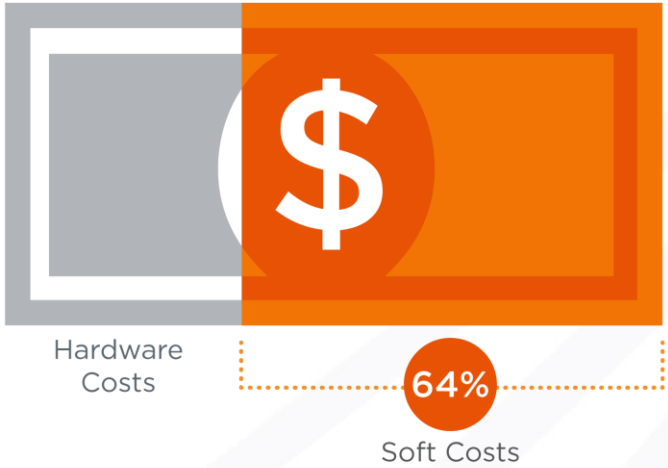
40%

Decrease in Non-Module Costs

Implied Non-Module Cost is used as a proxy for soft costs due to data limitations

Source: NREL

Balance of Systems (Soft Costs)



4%
Permitting, Inspection, Interconnection (and associated fees)

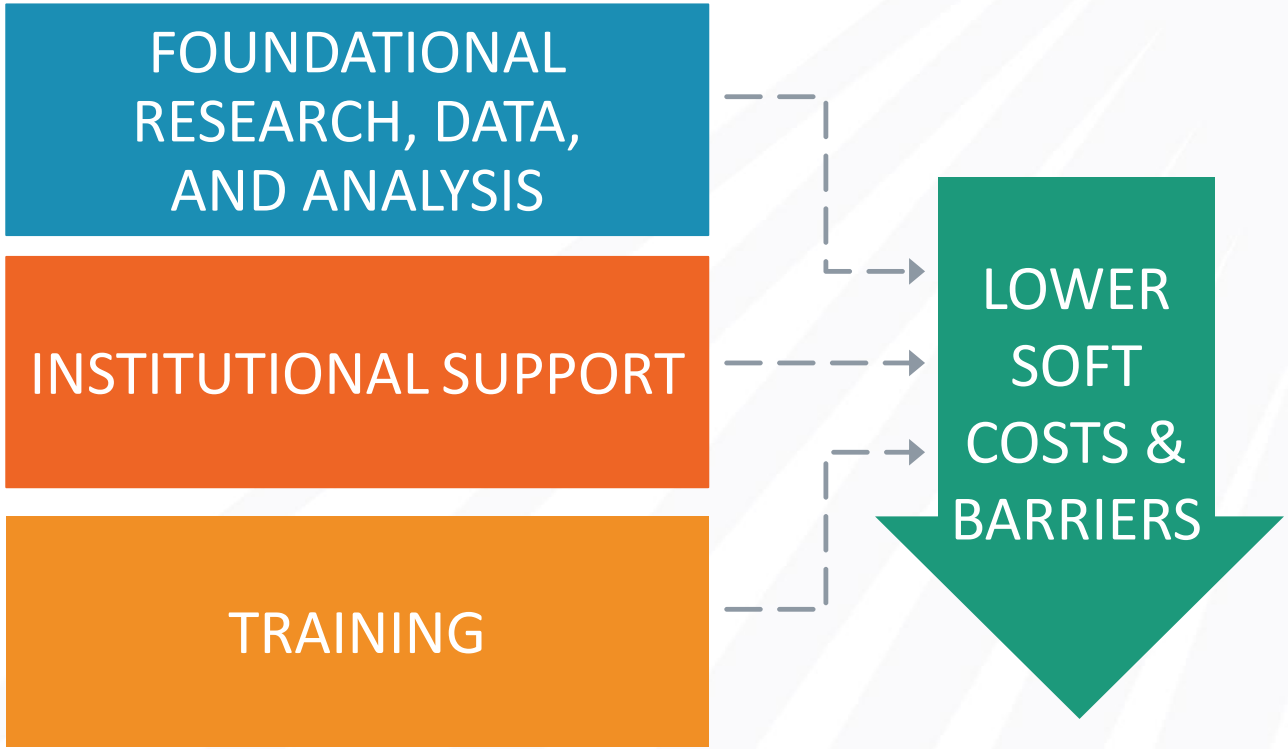
9%
Marketing/Customer Acquisition

11%
Labor

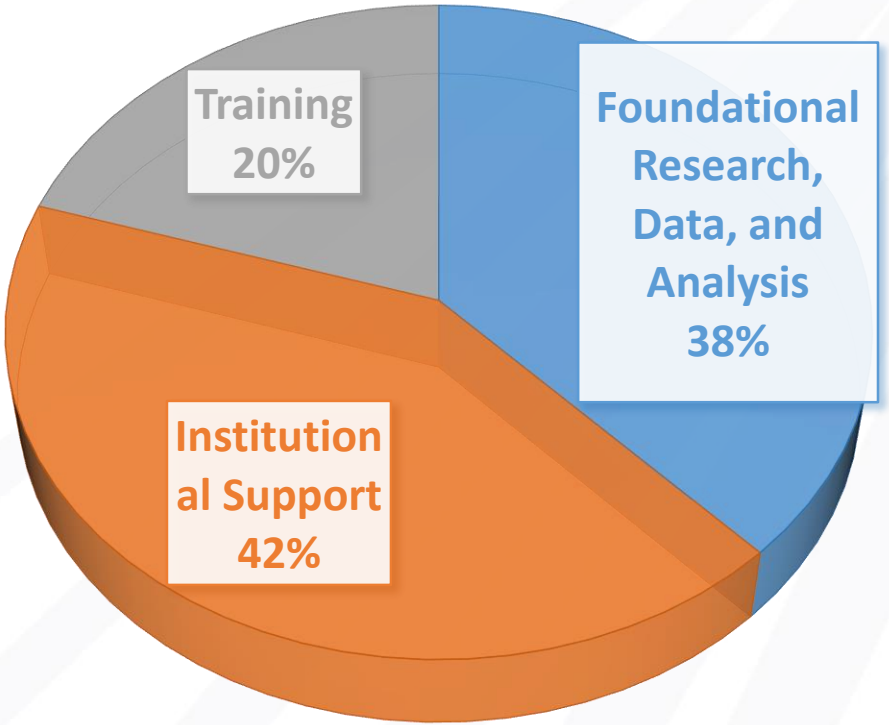
11%
Financing

30%
Supply chain, overhead, margin ("Corporate Costs & Profit")

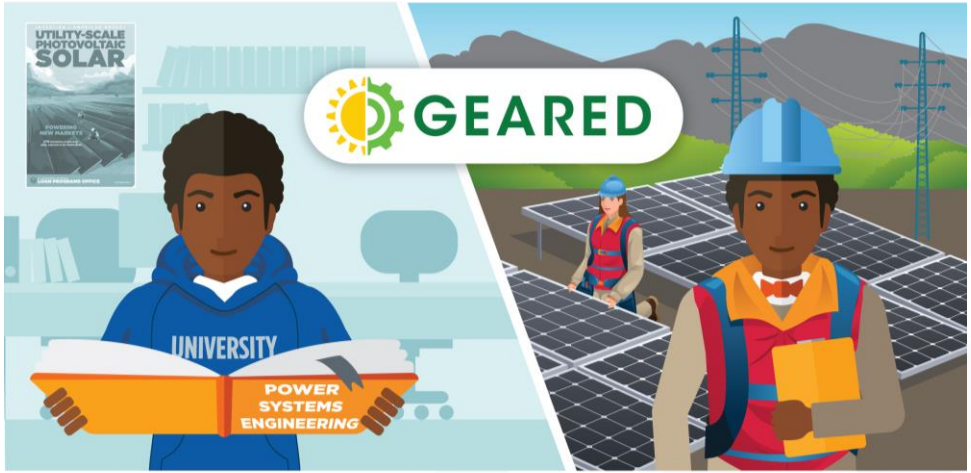
Core Components of Soft Costs Program



Breakdown of Funding by Core Component

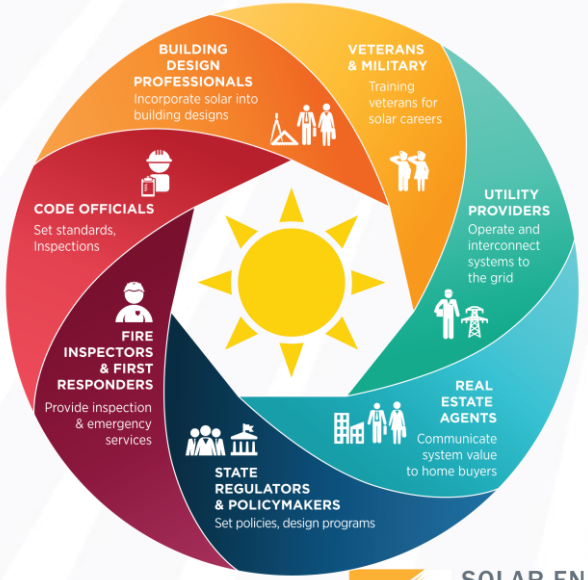


Training



GEARED: Power Systems Engineering

Solar Training and Education for Professionals (STEP)



Foundational Research, Data, and Analysis

The Orange Button simplifies and standardizes solar data so you can use it.

Sandia National Laboratories

BERKELEY LAB
Lawrence Berkeley National Laboratory

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

SRNL
SAVANNAH RIVER NATIONAL LABORATORY

Pacific Northwest
NATIONAL LABORATORY

Argonne
NATIONAL LABORATORY

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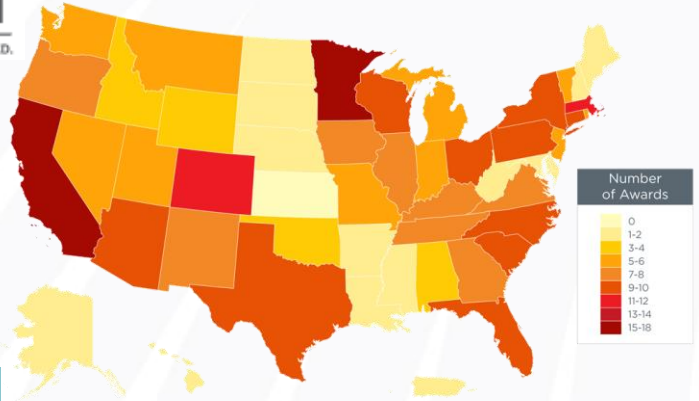
Institutional Support

- Addressed through:
  - Designation Programs
  - Challenges
  - State Energy Strategies
  - Solar Market Pathways

SOLSMART
NATIONALLY DISTINGUISHED. LOCALLY POWERED.

Awardees Nationwide!!

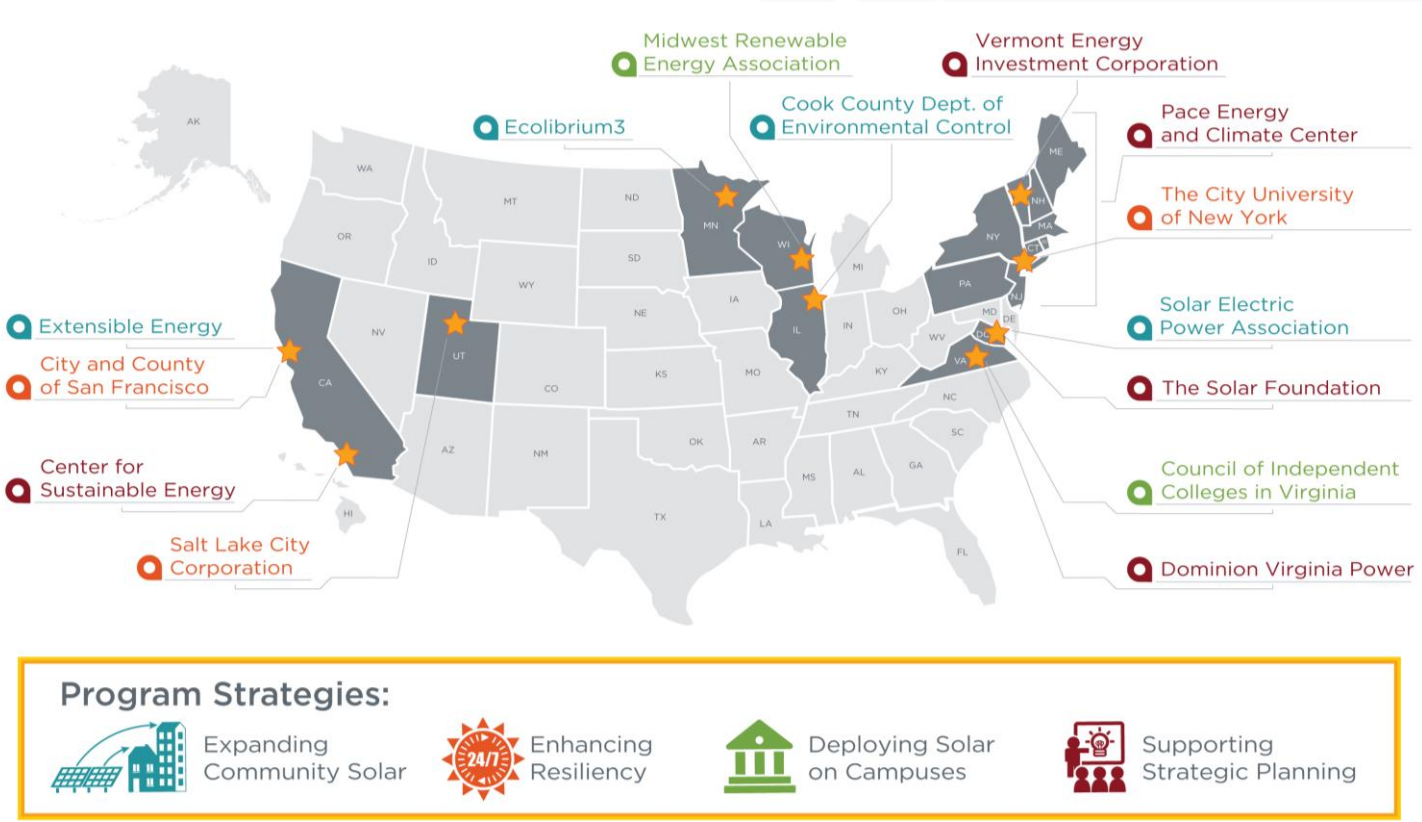


solarmarket PATHWAYS

Solar Market Pathways

The Solar Market Pathways Program brings together 14 diverse teams under a single goal:

SHARE BEST PRACTICES TO REDUCE SOLAR'S SOFT COSTS.



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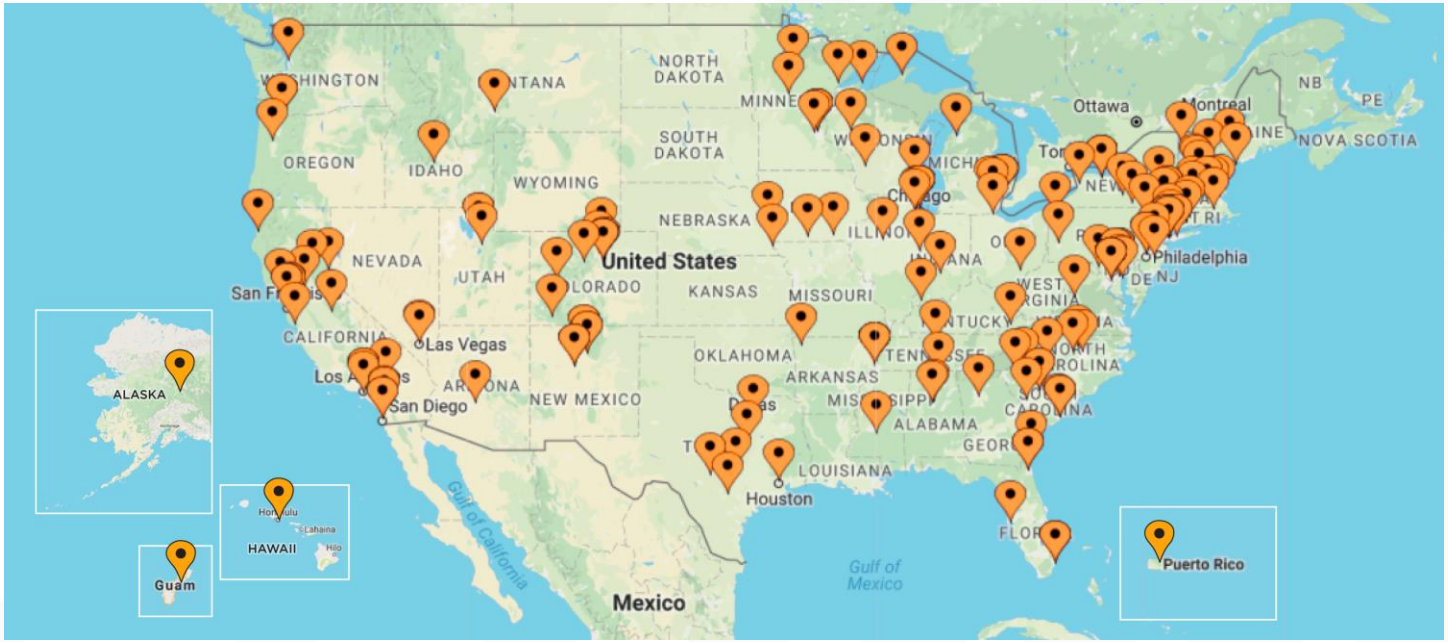
Solar in Your Community Challenge Team Map

172 Teams from **122** Cities and **4** American Indian Reservations
in **40** States plus Puerto Rico, Guam and Washington D.C.



State Energy Strategies

SolSmart – Nationally Distinguished. Locally Powered.

New Analytical Support

Analytical Support for Public Utility Commissions

- LBNL, PNNL, and NREL initiative provides **high impact analytical support for state public utility commissions (PUCs)** to address barriers to the integration of solar photovoltaics (PV) within the U.S. electricity system.

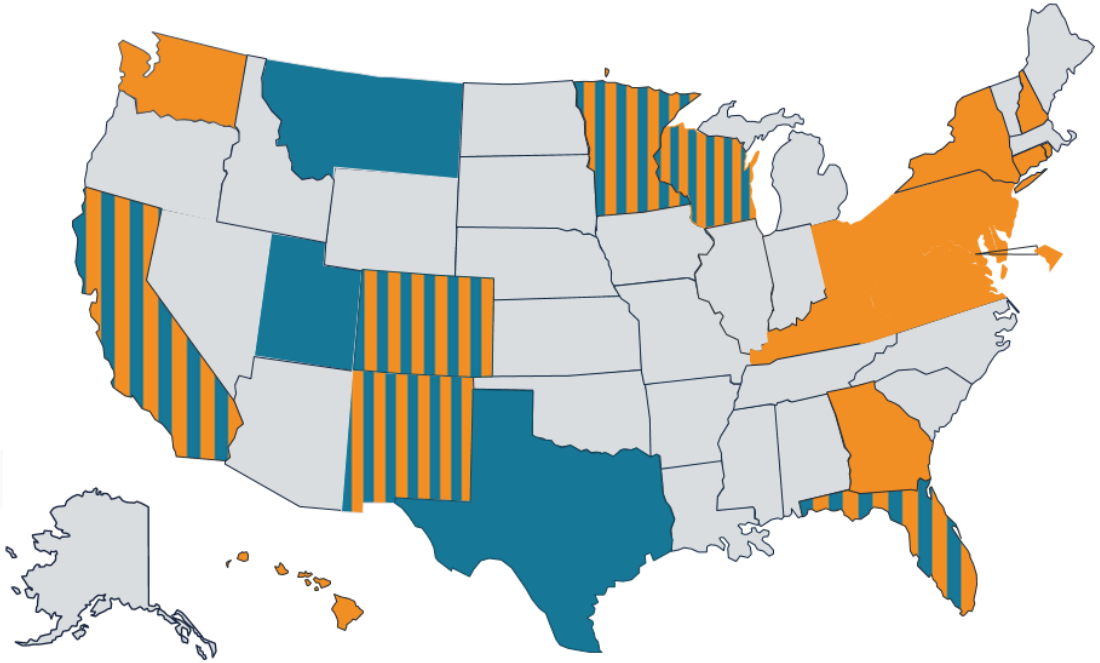
Solar Energy Innovators Program

- The opportunity funds researchers, "Innovators," to **explore solutions to the challenges faced by electric utilities, electric public utility commissions (PUCs), and energy service providers** as the deployment of solar energy, as well as other distributed energy resources (DERs), increase on the electrical grid.
- Innovators selected for the program conduct **hands-on, practical research and development on-site** at a utility, energy service provider, or PUC Host Institution for an appointment of up to 2 years.

Solar Energy Innovation Network

Cohort A: Improving Reliability and Affordability of Solar Energy through Options Analysis and Systems Design

Cohort B: Improving Grid Flexibility and Resiliency through Advanced Siting and Operations of Solar + DER



Note: PJM territory is highlighted as one location.

Soft Costs Team

Fania Barwick

Casey Canfield, Phd

Jack Hoskins

Shubha Jaishankar

Sara Machin

Odette Mucha

Michele Boyd (not pictured)

Christian Philipsen

Ammar Qusaibaty, Phd

David Rench-McCauley, Phd

Elaine Ulrich, Phd

NREL Support

Robert Margolis
David Feldman
Monisha Shah

Soft Costs Team Review Agenda

	SUBPROGRAM PARALLEL SESSIONS	
11:00AM–12:00PM	**Soft Costs Landscape and Approaches** Elaine Ulrich, Solar Energy Technologies Office	Virginia Suite
1:00PM–3:00PM	**Data into Action** Dave Rench-McCauley, Solar Energy Technologies Office (Moderator) Tom Tansy, SunSpec Alliance Ken Gillingham, Yale University Ryan Wiser, Lawrence Berkeley National Laboratory **Technology to Market: Innovations in Soft Cost Reductions** Kyle Fricker, Solar Energy Technologies Office (Moderator) Brad Bowery, Pace Avenue Ed Albanese, KryptonCloud Emily Fritze, Powerhouse Chris Barrett, ProjectEconomics Benjamin Gaddy, Clean Energy Trust	Virginia Suite

	SUBPROGRAM PARALLEL SESSIONS	
11:00AM–12:00PM	**SOFT COSTS: STATE AND LOCAL INNOVATION** Shubha Jaishankar, Solar Energy Technologies Office (Moderator) David Althoff, Pennsylvania Department of Environmental Protection Kristen Ardani, National Renewable Energy Laboratory Tria Case, City University of New York Zach Greene, The Solar Foundation	Virginia Suite
1:00PM–3:00PM	**Accelerating Learning Curves** Odette Mucha, Solar Energy Technologies Office (Moderator) Lora Toothman, Council of Independent Colleges in Virginia Doug Danley, National Rural Electric Cooperative Association Andy Walker, National Renewable Energy Laboratory Cosimina Panetti, Building Codes Assistance Project **Small Group Discussions** **The Future of Soft Costs**	Virginia Suite