SMPDC solar questions:

- What are the policy changes (State, Local) and what is the timeline of development under these new policies?
    - Development process is typically three years
    - 6-18 months for utility studies and interconnection
    - Up to 18 months for design, permitting, construction
- What kinds of regulatory issues and standards should the towns consider, in terms of municipal ordinances or when doing local permitting?
- What is community solar and what does it mean to your community? And what are other types of solar development?
- What are the different stages (State/local) of development for a project?
    - See slides
- What are the steps the town of Sanford went through when considering solar development in the community?
- What are the different types of solar development companies?

STAGE-BASED

- Site Acquisition
    - Land Scouts and Brokers
    - Landowners (self-perform)
- Early Stage Developers
    - Acquire from land scouts / brokers or self-originate
    - Take upfront risk on design, permitting, real estate negotiation, interconnection
- Late Stage Developers
    - Acquire from early stage developers
    - Purchase projects after milestones hit (e.g. permitting, incentives, ISA) or partner with early stage developers to get projects to finish line (e.g. interconnection payments)
    - Sell at NTP or COD, and/or own-operate
- Full-Suite Developers
    - Acquire from land scouts / brokers, early stage developers, and self originate
    - Assume all risk from start to finish; sell at NTP or COD; hire EPC
    - Some have EPC capabilities and do directly
- Miscellaneous
    - Developers may hire EPC to handle entirety of equipment procurement and construction under one contract (good way to mitigate risk, ensure certainty, quality, etc.)
    - Some may handle elements of equipment procurement (purchasing panels / equipment directly) then hire out an EPC or subcontract directly (structural, electrical, civil) for remainder
    - In this case, developers have appetite to undertake performance risk due to different drivers (e.g. financial efficiency, preference, visibility into process); but must know what they're doing. Some projects don't always make it!
- Long-Term Asset Owners
    - Buy projects from developers at NTP or COD
    - In business of operating assets (tax equity funds)
    - Sometimes hire own EPC and third-party review engineer (scrub documents for purchase, ensure quality control during construction)

SIZE BASED

- Small-Scale: 100 kW – 1 MW
    - Build Cost of $200K - $1.5 MM
    - Installers
    - Individuals or Small Groups
    - Farmers, commercial and industrial
    - Difficult segment because if you don't have direct tax appetite (tax equity), transaction costs are typically too high for a 3rd party for-sale developer to undertake
    - Behind-the-meter or distribution level
- Medium Scale: 1 MW – 20 MW (5 – 100 acres)
    - Third-Party Developers
    - Distribution Scale
    - More reliant on policy & incentives
- Large-Scale: 20 MW and above (above 100 acres)
    - International Companies
    - Transmission Scale
    - More easily market-driven

GEOGRAPHY BASED

- Locally Based >> HQ, likely to show up directly at most if not all permitting hearings; strong relationships and high-touch
- Regional >> field office or HQ, can show up directly but also likely to have engineering representatives; strong presence
- National >> field office, may show up directly but likely to rely on consultants / partners; typically owners, thin local presence
- International >> utility-driven, owners; likely to rely on consultants and development partners, thin local presence

- There are a lot of different ways towns will interact with solar. In some cases, towns will be making local permitting decisions for projects on private land. In other cases, projects will occur on municipal land that's leased for grid scale solar, and in other cases, towns will be purchasing solar to directly offset the towns energy usage. What siting considerations should developers, towns, and land owners take into consideration when thinking about where a project will be located?

    - Other prompting questions:
        - What do the developers take into account when looking for land to lease for solar development?
            - Incentive Structure
            - Utility Territory
            - Interconnection Availability
            - Project Type
            - Minimum Size & Acreage
            - Buildable Footprint
            - Local Zoning
            - Land Title
            - Real Estate Competition

        - What are some of the natural resource and agricultural considerations to take into account when siting solar?

            ECOLOGY
            - Site Design >> Open Field? Full Forest? What Remains (i.e. How Much? Proposed Management?)
            - Habitat Type >> Forests / Wetlands / Meadows / Endangered Species / Interests >> quality matters
            - Permitting >> interests should be addressed by
            - Vegetation Impact >> Ground Cover / Non-Solar Areas / Edge Corridors / Habitat Connectivity
            - Mitigation Measures >> New Plantings / Habitat Features / Selective Cutting / Respect Natural Processes
            - Soil Management >> Mowing? Holistic Management? Amendments? Root Systems? NREL Research

            STORMWATER
            - Design margins of safety beyond typical parameters as required by state or local level jurisdictions
                - Massachusetts Wetlands Protection Act requires that developers not increase the rate in which water flow off a site during a 100-year storm
                - Projects usually go beyond this measure to create safer and ecologically sound runoff conditions.
            - Utilizing low-impact stormwater BMPs (Best Management Practices)
                - Infiltration trenches before reaching basins, level-spreaders, check dams, vegetative buffer, diverting flow away from adjacent properties,
                - Improved conditions based on ground-cover and land management regime (e.g. native grasses, mitigative plantings, etc.)

            AGRICULTURE
            - Design and Siting
                - Maintaining some available land in margins
                - Segment property in otherwise sensible ways to maintain continuity
                - Canopies and spacing can make difference
            - Construction Standards
                - MA and NY offer good models
                - Protocols for avoiding soil compaction, minimizing impervious surface, maintaining topsoil,
            - Management Model
                - Farmer Access >> margins, remainder of land, within footprint?
                - Land Rent >> critical source of income to keep farms viable
                - Expand Production >> let farmers farm
            - Decommissioning
                - Require bonds for farmland
                - Detailed as-built drawings
                -

        - What should towns take into account when giving local permits?
            - Clear Zoning Pathway
                - Allowable Use Table
                - Dimensional Requirements
                - Submission Requirements
                - Site Plan Approval vs. Special Permits
                - Understanding of How They Relate to State / Federal Permitting Pathways (e.g. stormwater)
            - Standard Conditions vs. Special Conditions
            - Construction Protocols
                - Erosion Control BMP's

        - Inspections on site limits of work, erosion control, and site stabilization before construction release
        - Staging Area / Logistics Plan
        - Construction Impacts (e.g. road traffic, vehicle trips, wear and tear)
        - Consider construction hours
        - Staged Release (e.g. site preparation, access roads, basins, other civil) before Building Permit?
        - Encourage minimal leveling or grading if desirable
        - Discourage importation of harmful materials (e.g. crushed asphalt on farmland)
    - Close Out and Inspection Standards for Certificate of Occupancy
        - Site Establishment (e.g. seeding, basins, screening if required)
        - Signage
        - Closeout Electrical and Building Inspection

- Why did Sanford want solar? What are some of the benefits you've experienced from solar development?
- What are some of challenges that Sanford faced in choosing and siting solar development projects and who did they solve these challenges?
- How does Sanford deal with solar projects as a commercial entity – valuation, taxation, permitting, municipal financial support (e.g. tax increment financing)?
- What should towns be considering as they evaluate different solar proposals to offset their energy usage?

    - PPA's to Entice Development >>
        - Leasing out Town-owned land
        - Example of South Portland and recent LF deal with Revision Energy
        - Opens opportunity for lease, taxes, and electricity savings
        - Opportunity to purchase equipment in some cases
    - Reputation of Company >>
        - Track Record? References? Well Established?
        - Sample Bill Explaining Utility / BW Bill? Does Company Have Operating Projects?
    - Accuracy of Subscription >>
        - Over-/Under-Sized? Utility Accounts That Make Sense?
        - Annually price should be less
        - Undersizing (80-85%) allows energy efficiency over time)
        - Seasonal Variation → e.g. schools may have excess credits in summer when HVAC (realities of solar – credits should carry forward, but from a cash flow perspective, summer is higher but annual is cheaper)
    - Pricing >>
        - Percent Discount (tariff) vs. Fixed Floor Price (bill credits because variability)
    - Term >>
        - Often coincides with financing timeline of projects (20 years)
        - Not contract you're paying for – it's a contract that's saving you money
    - Comprehensive Approaches >>
        -
    - Protection >>
        - Line of sight to specific projects
        - Clear cancellation or extension terms if developer doesn't deliver project
        - Timeline of project development milestones w/extensions for utility delays
        - Get attorney who has worked on these agreements before so they can ask right questions
        - Ask developer if they'll provide sign-up bonus equal to estimated legal expenses they have (w/in reason)