Online Appendix - Survey text

<text in brackets> describes the conditional logic behind the questions shown
“not asked in NY” marks questions that were not shown to participants identified through the New York proceeding

1. Which of the following best describes your role?
   a) I represent my organization/clients in regulatory proceedings
   b) I analyze policy on behalf of my organization/clients
   c) I am in a supervisory or a decision-making position
   d) Other: ___________________________________________________________________

2. Which of the following describes your organization?
   a) Electricity customer or a representative of electricity customers
   b) Owner of distributed energy resources (DER), a representative of DER owners, DER aggregator, PV contractor or other DER-centered role
   c) Utility or a representative of utilities
   d) Organization centered around environmental protection
   e) Regulator
   f) Other (owner of transmission-level generation, competitive retail supplier etc.)

Customers block

<block of questions shown to those who choose answer a) in Q2>

3. Does your organization/clients buy electricity directly from wholesale markets?
   a) Yes, it buys electricity in wholesale energy markets.
   b) No, my organization is solely a retail customer.

4. Do you agree that the future electricity sector policies, such as subsidy programs and emission pricing, are important for your organization/clients?
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree

5. Has your organization/clients considered investing or already invested in distributed energy resources (DERs), such as solar PV, batteries, combined heat and power etc.?
   a) Yes
   b) No
6. What factors were important in your organization's/clients' decisions about DER investments? (Select all that apply)
<show if answer to Q7 is “Yes”>
    f) Ability to hedge electricity price risk
    g) Backup power
    h) Organizational sustainability goals
    i) State incentives
    j) Other (please briefly describe important factors below):

7. What information does your organization/clients need to decide whether to invest in DER? (Select all that apply)
<show if answer to Q5 is “Yes”>
    a) Expected retail rates 1 to 10 years from now <show if chosen answer b) to Q3>
    b) Expected wholesale energy prices 1 to 10 years from now <show if chosen answer a) to Q3>
    c) Expected capacity market prices
    d) Expected distributed energy resources tariffs
    e) Expected grid mix
    f) The waiting time in the interconnection queue or the interconnection cost
    g) Hosting capacity
    h) Distribution-level congestion
    i) Transmission-level congestion
    j) Emissions from the grid
    k) Consumer demand
    l) Other (please briefly describe desired information below):

8. Of the kinds of information you listed as important for DER investment, what information is **easily accessible** for your organization/clients?
<show only the options marked in Q7 as relevant>
    a) Expected retail rates 1 to 10 years from now
    b) Expected wholesale energy prices 1 to 10 years from now
    c) Expected capacity market prices
    d) Expected distributed energy resources tariffs
    e) Expected grid mix
    f) The waiting time in the interconnection queue or the interconnection cost
    g) Hosting capacity
    h) Distribution-level congestion
    i) Transmission-level congestion
    j) Emissions from the grid
    k) Consumer demand
    l) <option typed in as “Other” in Q7>
    m) None of the above
9. Of the kinds of information you listed as important for DER investment, what information is not accessible for your organization/clients?

<show only the options marked in Q7 as relevant>

a) Expected retail rates 1 to 10 years from now
b) Expected wholesale energy prices 1 to 10 years from now
c) Expected capacity market prices
d) Expected distributed energy resources tariffs
e) Expected grid mix
f) The waiting time in the interconnection queue or the interconnection cost
g) Hosting capacity
h) Distribution-level congestion
i) Transmission-level congestion
j) Emissions from the grid
k) Consumer demand
l) <option typed in as “Other” in Q7>
m) All relevant information is available

10. Are there demand-response programs in which you organization/clients can participate?

a) Yes
b) No

11. What factors are important in your organization's/clients' decisions about participation in demand response programs? (Select all that apply)

<show if answered “Yes” to Q10>

a) Expected electricity costs savings
b) The minimum required duration of the response
c) The expected frequency of response events
d) The event notification time (10 minutes prior, 90 minutes prior, etc.)
e) Penalties for failing to participate during a response event
f) The complexity of the participation rules
g) Limited discomfort/disturbance to main operations during the actual response
h) Successful stories of demand response programs in other organizations of the same type
i) Other: ____________________________________________

12. When deciding whether to participate in a demand response program, did your organization/clients have access to all the information you needed to properly evaluate those factors?

<show if answered “Yes” to Q10>

a) Yes
b) No
13. What information about the demand response is **not accessible** for your organization/clients? (Select all that apply)
   <show if answered “Yes” to Q10 & answered “No” to Q12>
   a) Expected electricity costs savings
   b) The minimum required duration of the response
   c) The expected frequency of response events
   d) The event notification time (10 minutes prior, 90 minutes prior, etc.)
   e) Penalties for failing to participate during a response event
   f) The complexity of the participation rules
   g) Disturbance to main operations during the actual response
   h) <show “Other” from Q11 >
   i) All relevant information is available

<next question – Q40>

**DER block**

<block of questions shown to those who choose answer b) in Q2>

14. Which of the following resources does your organization/clients manage? (Select all that apply)
   a) Renewable generation – solar or wind
   b) Aggregation of distributed generation resources
   c) Aggregation of demand response programs
   d) Batteries or other storage resources
   e) Other role around distributed energy resources

15. Does your organization/clients participate in wholesale markets?
   a) Yes
   b) No, but it might in the future
   c) No

16. Do you agree that your organization/clients have sufficient information to accurately forecast their own generation a day in advance?
   <show if answered a) or b) to Q14>
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree

17. Do you agree that your organization/clients have sufficient information to correctly forecast the amount of demand response available a day in advance?
   <show if answered c) to Q14>
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree
18. Please mark how important the following issues are for your organization’s/clients’ operations.

<table>
<thead>
<tr>
<th></th>
<th>Not important</th>
<th>Slightly important</th>
<th>Moderately important</th>
<th>Important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Current characteristics of local distribution network, such as hosting capacity, flow limits, or voltage limits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Future characteristics of the local distribution network, such as hosting capacity in 5 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Information on behavior of electricity consumers, e.g., consumption profiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Future electricity sector policies, such as subsidy programs and emission pricing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19. Which of the following properties of local distribution network are relevant for your organization/clients? (Select all that apply)

<show question if either future characteristics or current characteristics of distribution network marked higher than “Not significant” in Q18>

a) Hosting capacity
b) Impendences in distribution networks
c) Voltage limits of the distribution nodes
d) Apparent flow limits of the distribution lines
e) Line losses
f) The amount or characteristics of other DERs connected to that grid
g) Other: ________________________________________________

20. Of the following, what information is **easily accessible** to your organization/clients?

a) Current characteristics of the local distribution network, such as hosting capacity, flow limits, or voltage limits
b) Future characteristics of the local distribution network, such as hosting capacity in 5 years
c) Information on behavior of electricity consumers, e.g., consumption profiles
d) Future electricity sector policies, such as subsidy programs and emission pricing
e) None of the above.

21. Of the following, what information is **not sufficiently available** to your organization/clients?

a) Current characteristics of the local distribution network, such as hosting capacity, flow limits, or voltage limits
b) Future characteristics of the local distribution network, such as hosting capacity in 5 years
c) Information on behavior of electricity consumers, e.g., consumption profiles
d) Future electricity sector policies, such as subsidy programs and emission pricing
e) All the listed information is available to my organization/clients.
22. How does your organization/clients get information about electricity consumers' behavior?  
<show if marked 18c) higher than 1>

   a) The information is public  
   b) It is made readily available by local utilities, regulators or other parties  
   c) It is made partly available by local utilities, regulators or other parties  
   d) It is not available publicly but my organization/clients can get that data reliably  
   e) It is not available publicly but my organization/clients can get that data somewhat reliably  
   f) It is not available at all  

23. What other type of information is your organization/clients missing when making decisions around distributed energy resources?  

________________________________________________________________

24. How does the lack of information about local distribution networks affect your organization'/clients' investments in distributed energy resources? (Select all that apply)  

   a) My organization/clients can invest only when they have all the information they need  
   b) Investments take longer  
   c) Investments become more risky  
   d) It does not affect investments  

25. Does the lack of information about local distribution networks affect how your organization/clients operates its storage resources?  
<show if answered d) in Q14>

   a) Yes  
   b) No  

<Next Question Q40>
26. Please mark how important the following issues are for your organization's/clients' operations.

<table>
<thead>
<tr>
<th></th>
<th>Not important</th>
<th>Slightly important</th>
<th>Moderately important</th>
<th>Important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) DER projects planned by</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>residential customers in the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>utility’s service area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) DER projects planned by</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>commercial and industrial</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>customers in the utility’s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>service area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Load growth over the next 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) The need for distribution grid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>investments over the next 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Electricity consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>profiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) The future electricity sector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>policies, such as subsidy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>programs and emission pricing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

27. Do you agree that your organization/clients are well informed about the planned DER projects undertaken by residential customers in the utilities’ service area?
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree

28. Do you agree that your organization/clients are well informed about the DER projects planned by commercial and industrial consumers independently of utility in its service area?
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree
29. Do you agree that your organization/clients have sufficient information to correctly forecast the load growth over 5 years’ time?
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree

30. Do you agree that your organization/clients have sufficient information to correctly forecast what the needs for distribution grid investments are going to be in 5 years?
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree

31. What type of information is your organization missing to forecast what the needs for investment in distribution grid are going to be in 5 years?
   <shown if answered “somewhat disagree” or “strongly disagree” in Q30>
   Response: ________________________________________________

32. Do you agree that your organization/clients have sufficient information to correctly forecast what the rates for retail consumers are going to be in five years’ time?
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree

33. How well can your organization/clients forecast the response of consumers to various rate changes?
   a) Very well
   b) My organization/clients have a good general understanding of consumer behavior but providing numerical forecast would be challenging
   c) My organization/clients have a basic understanding of consumer behavior but they cannot forecast the response to rate changes
   d) Consumer behavior is very hard to understand for my organization/clients
   e) My organization/clients have not studied consumer behavior.

34. What other type of information is your organization/clients missing when making decisions around DERs and distribution networks?

   ____________________________________________________________

   <next question -> Q40>
35. Please mark how important the following issues are for your organization’s work.

<table>
<thead>
<tr>
<th></th>
<th>Not important</th>
<th>Slightly important</th>
<th>Moderately important</th>
<th>Important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Current characteristics of the local distribution networks</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
<tr>
<td>b) Future characteristics of the local distribution network, such as hosting capacity in 5 years</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
<tr>
<td>c) Costs of running and maintaining the distribution network</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
<tr>
<td>d) Behavior of electricity consumers, e.g., the consumption profiles</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
<tr>
<td>e) Wholesale market outcomes, such as the dispatch order or marginal generator</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
<tr>
<td>f) Investment costs or marginal generation costs of future resources</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
<tr>
<td>g) Future electricity sector policies, such as subsidy programs and emission pricing</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
<tr>
<td>h) Distribution grid investment needs over the next 5 years</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
<tr>
<td>i) Future rates for retail consumers</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
<td>Ο</td>
</tr>
</tbody>
</table>
36. Of the kinds of information you listed as important, what information is **easily accessible** for your organization/clients? (Select all that apply)  
*<show only the options marked in Q35 as at least slightly important>*
   a) Current characteristics of the local distribution networks  
   b) Future characteristics of the local distribution network, such as hosting capacity in 5 years  
   c) Costs of running and maintaining the distribution network  
   d) Behavior of electricity consumers, e.g., the consumption profiles  
   e) Wholesale market outcomes, such as the dispatch order or the marginal generator  
   f) Investment costs or marginal generation costs of future resources  
   g) Future electricity sector policies, such as subsidy programs and emission pricing  
   h) Distribution grid investment needs over the next 5 years  
   i) Future rates for retail consumers  
   j) None of the above

37. Of the kinds of information you listed as important, what information is **not accessible** for your organization/clients? (Select all that apply)  
*<show only the options marked in Q35 as at least slightly important>*
   a) Current characteristics of the local distribution networks  
   b) Future characteristics of the local distribution network, such as hosting capacity in 5 years  
   c) Costs of running and maintaining the distribution network  
   d) Behavior of electricity consumers, e.g., the consumption profiles  
   e) Wholesale market outcomes, such as the dispatch order or the marginal generator  
   f) Investment costs or marginal generation costs of future resources  
   g) Future electricity sector policies, such as subsidy programs and emission pricing  
   h) Distribution grid investment needs over the next 5 years  
   i) Future rates for retail consumers  
   j) There is no such information

38. Which of the following properties of local distribution network is relevant for your organization/clients? (Select all that apply)  
*<show only if distribution grid investments, current or future characteristics marked in Q35 as at least slightly important>*
   a) Hosting capacity  
   b) Impedances  
   c) Voltage limits of the distribution nodes  
   d) Apparent flow limits of the distribution lines  
   e) Other: ________________________________________________

39. What other type of information is your organization/clients missing when making decisions around distributed energy resources?  
________________________________________________________________
**Block of questions for all**

<show to all>

40. Do you agree that, from the perspective of your organization/clients, the future electricity sector policies, such as subsidy programs and emission pricing, are uncertain?
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree

41. Do you agree that your organization/clients have sufficient information to correctly forecast marginal emissions for the electricity sector in any period?
   a) Strongly agree
   b) Somewhat agree
   c) Neither agree nor disagree
   d) Somewhat disagree
   e) Strongly disagree

42. How strong is the impact of missing or incomplete information identified in the questions above on the functioning of your organization/clients?
   (0- there is no effect, 10- information problems are making a successful operation of my organization/my clients' organizations almost impossible)
   *not asked in NY*

   (respondent moves the gauge on a scale between 0 and 10)

43. How does the missing or incomplete information affect your organization/clients? (Select all that apply)
   *not asked in NY*
   a) it changes the achievable profits
   b) it changes the effectiveness of actions
   c) it affects competitiveness
   d) it affects the pace of decision-making or actions
   e) it affects what projects are feasible
   f) it affects the risk profile of the projects
   g) it doesn't affect my organization/clients
   h) other ________________________________________________
44. How does your organization/clients compensate for lack of information? (Select all that apply)
   a) It ignores the missing piece of information
   b) It replaces the lacking information with own assumptions
   c) It follows the assumptions or approaches used by other organizations to deal with lacking information
   d) It uses historical data to forecast the future values
   e) Other: ________________________________________________

45. Where does your organization/clients usually get the information about electricity sector? (Select all that apply)
   a) Regulatory submissions
   b) websites of RTOs/ISOs (e.g. MISO, SPP, CAISO)
   c) FERC data
   d) Private data companies and consultancies
   e) In-house analytics
   f) The local utility
   g) Direct inquiries with other sector’s participants
   h) Other ________________________________________________

46. Do you think there is a need for new regulation that would ensure the availability of information that is relevant for your organization/clients for making decisions related to distributed energy resources?
   
   not asked in NY
   a) Yes
   b) No
   c) I have no opinion

47. Has the coronavirus pandemic changed your responses to any of the above questions?
   a) Yes, to many of them
   b) Yes, to some of them
   c) No