

FOCUS GROUP STUDIES OF CUSTOMERS' OPINIONS ON NEXT GENERATION AIR SENSOR MESSAGING

MODERATOR'S GUIDE

***Note to moderators: It is intended that this moderator's guide will be used to guide and conduct focus group studies to gather customers' opinions on next generation air sensor messaging in accordance with the Federal Paperwork Reduction Act Information Collection Request. Each Section I-VII has a suggested time frame in parentheses, for a total expected focus group session time of 2 hours. Section VI is an optional section with questions that may be used as a specific situation dictates and time allows.**

I. INTRODUCTION (10 Min.)

Moderator introduces himself and describes the focus group process:

- Focus group guidelines: *(e.g. talking one at a time, voice your opinion, respect other opinions, stop if someone is off subject, no wrong answers, cell phones off, bathroom one at a time)*
- Disclosure of audio and video recording & observers
- Participants introduce themselves — where they live, family, employment, etc.

II. CONTEXT AND AWARENESS OF AIR QUALITY (10 Min.)

What are some of the things you like most about living in this community?
And in general, what do you think are the biggest problems or concerns facing this area today?
(WRITE ON EASEL; PROBE FOR AIR QUALITY CONCERNS)

Are there any issues about air quality that are particular concerns for you?

Do you think those problems are getting better or worse? What leads you to think that?

How do issues related to air quality affect you or your family?

What are the biggest causes of air quality problems in this area, so far as you know?

What air pollutants are you concerned about in your area and why?

How do you typically get information about air quality in your community?

Do you ever see or hear messages warning the public about air quality conditions?

(PROBE FOR SOURCE, AND FOR AWARENESS OF COLOR CODES/NUMBERS)

Where do you see them?

Who sponsors them?

Do these messages seem credible?

Has anyone ever told you to be on the lookout for these kinds of air quality alerts? Who and why?

Do you ever change your behavior when you hear those messages? Why or why not?

Does anyone know what Air Quality Index (AQI) is? Where have you heard about it? What does it measure? Where would you go to find out about it?

III. INTRODUCING AIR SENSORS (10 Min.)

When you hear the terms “air sensors” what do you think of?

(SHOW TERMS ON EASEL) What do you know about air quality sensors?

Next, suppose I told you that next generation air sensor technologies are becoming available for the public to use to collect near-real time air pollution data. What does that mean to you? Does it interest you? Why or why not?

(PROBE ON “NEXT-GENERATION” AND “NEAR REAL TIME”)

If you had the ability to view real-time personal air sensor data on your phone, what would you use that for?

Now I’m going to hand out some booklets we will be using tonight. Please take one, put your name in the upper right hand corner, and pass them down. Then turn to page three.

Here you will see a description of next-generation air measurement (NGAM). What do you think of this?

DEFINITION (No more than 5 Min.)

Next-generation air measurement (NGAM): NGAM refers to a range of new technologies and methods to measure air pollution at a faster rate and in more locations. NGAM technologies are used in a variety of applications including personal air quality monitoring with variable costs.

Defining traits of NGAM technologies include:

- 1. Active measurement of one or more air pollutants, without later laboratory analysis required.*
- 2. Miniaturization of technology enabling portable monitoring or small footprint installations.*
- 3. Simplified operation to the end user.*

(*ADDITIONAL INFORMATION FOR MODERATOR ON NGAM TECHNOLOGY INCLUDED AS APPENDIX A)

IV. AIR SENSOR MESSAGING (25 Min.)

**(TURN TO “POLLUTANT A” MESSAGING IN THE BOOKLET)
(ATTACHMENT 1)**

Now, let’s pretend that you have a personal air sensor that is giving you readings every minute. For this section we will be focusing on a sensor that is giving you readings for Pollutant A (e.g. ozone). You see this message come onto the screen of your sensor/mobile phone related to the reading for that minute.

Does anyone know what Pollutant A (e.g. ozone) is? What problems does it cause, and why?

Please turn to the next page in your booklet – here you will see a description of what Pollutant A (e.g. ozone) refers to.

(Insert Pollutant A Definition)

Example: *Ozone is found in two regions of the Earth's atmosphere – at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O₃). While upper atmospheric ozone protects the earth from the sun's harmful rays, ground level ozone is the main component of smog. Ground level ozone, is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOC).*

Please turn to the next page in your booklet – here you will see examples of messages that might come onto the screen of your sensor/mobile phone related to the Pollutant A (e.g. ozone) air sensor reading for that minute.

What does the low/medium/high message mean to you?

What would you do in response to these messages?

(PROBE: What does “consider reducing outdoor activity”, “check the AQI” or “sensor is not working properly” mean to you and what actions (if any) would you take?)

**(TURN TO “POLLUTANT B” MESSAGING IN THE BOOKLET)
(ATTACHMENT 2)**

For this section we will be focusing on a sensor that is giving you readings for Pollutant B (e.g. PM_{2.5}). You see this message come onto the screen of your sensor/mobile phone related to the air sensor reading for that minute.

Does anyone know what Pollutant B (e.g. PM_{2.5}) is? What problems can it cause, and why?

Please turn to the next page in your booklet – here you will see a description of what Pollutant B (e.g. PM_{2.5}) refers to.

(Insert Pollutant B Definition)

Example: *Particle pollution (also called particulate matter or PM) is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope. PM_{2.5} refers to tiny particles or droplets in the air that are two and one half microns or less in width.*

Please turn to the next page in your booklet – here you will see examples of messages that might come onto the screen of your sensor/mobile phone related to the Pollutant B (e.g. PM_{2.5}) air sensor reading for that minute.

What does the low/medium/high message mean to you?

What would you do in response to these messages?

(Additional questions for pollutants with multiple message options)

Notice that there are two different messages associate with the “high” option. Do these mean different things to you? Would you react differently to them? How?

Under Option 1, what does or “move away” mean to you (i.e. What are you trying to avoid and where would you go)? What actions would you take?

Under Option 2, what does or “move to a different location” mean to you (i.e. What are you trying to avoid and where would you go)?

You may have noticed that the color scale (circle) behind the reading goes from light to dark blue as the message changes from low/medium/high. What does this color scale tell you about air quality? Do you find the color scale helpful?

V. **VILLAGE GREEN PROJECT¹ MOBILE WEBSITE (25 Min.)**

For this next section, we would like you to look at a website on your mobile phone. If everyone could take out your phones, please load the [Village Green Project] website as follows. **(GIVE DIRECTIONS)** Take a few minutes to explore what you see here.

What would you do first when you see this page? What does this page tell you? **(PROBE WHETHER THEY CLICK THE CIRCLE ICON)**

How would you use the information on this mobile website? How might this mobile webpage help you to make decisions about outdoor activities?

Is there anything confusing in this display? What might make it clearer?

Did you notice the website incorporates the information you just reviewed?

Did you notice a difference between the low/medium/high value/color and the AQI value/color? What does it mean?

Is it helpful to have both of these displayed? What might be the clearest way to display them together?

¹ Reference to EPA or to the Project title will not be disclosed to focus group participants in order to avoid potential bias.

The color scale goes from light to dark blue. What does this color scale tell you about air quality?

Where would you click on this mobile website if you had a question or wanted additional information?

Is there any other information you would like to see on this mobile message page?

VI. REVIEW OF SENSOR MESSAGING WEBSITE (20 Min.)

[BRING UP WEBSITE ON SCREEN AT THE FRONT OF THE ROOM]

For this next section, we would like you to look at the website shown on the screen at the front of the room. Pretend that you use this website to understand more about the messages you saw on your mobile device. Take a few minutes to explore what you see here.

- What would you do first when you see this page? What does this page tell you?
- Is there anything confusing in this display? What might make it clearer?
- What questions do you have concerning air sensors?
- Did you notice the link to the Frequently Asked Questions (FAQs)?
- Does the response to your question(s) appear on this website? Is it understandable?
- How would the FAQ page best be organized?
 - Is there too much/too little info?
 - How would you use the information on the page?

Is there any other information you would like to see on this messaging website?

VII. CONCLUSION/WRAP-UP (5 Min.)

Do you have any other questions regarding next-generation air monitors and the data they collect? What are your questions?

Finally, please turn to the last page of your booklet. After everything we have discussed tonight, please describe for me the three most important things

you think should be taken into account when thinking about how to make data from air sensors available to the public. **(DISCUSS IF TIME ALLOWS)**

Thank you and good night.

APPENDIX A

Table. NGAM Technology Groups

Group	Cost Range ¹	Example applications
Group 1	Less than \$500	In-home sensor devices; wearable personal monitor.

Group 2	\$500-2K	Hand-held, short-term monitoring by citizens; bicycle-mounted sensors to map air quality.
Group 3	2-10K	Stationary multipollutant sensor deployment in a community; portable sensors for harder-to-measure pollutants.
Group 4	10-100K	Long-term, multipollutant community monitoring system; higher-end portable pollutant detection system.
Group 5	>100K	Wide-area emissions detection system; instruments to detect difficult-to-measure pollutants.

1. Cost (in US dollars) considered to include instrument/sensor plus infrastructure for end user operation.