Indoor Environment Quality + Workplace Environment Anoka County Sheriff's Office (ACSO) Report 1

June 2014, Anoka, MN
Sustainable Post-Occupancy Evaluation Survey (SPOES)
B3 Guidelines

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1.0 Overview

The purpose of this report is to examine the connection between sustainable design criteria used in the design of the Anoka County Sheriff's Office (ACSO) and employees' satisfaction with their work environments. The ACSO facility was designed using the B3 Guidelines (formerly known as the Minnesota Sustainability Guidelines or MSBG) and completed for occupancy in 2010. The B3 Guidelines track specific state-funded buildings as a means of demonstrating real outcomes aimed at the conservation of energy resources, creation and maintenance of healthy environments, and occupants' satisfaction with their work environments. The Sustainable Post-Occupancy Evaluation Survey (SPOES) was developed to assess human outcomes in classroom and workplace settings in compliance with the project tracking requirements for the B3 Guidelines goals. The survey was conducted in June 2014 and serves as the first of two required POE events.

This SPOES report focuses on employees' satisfaction with the physical environment as related to 15 overall indoor environment quality (IEQ) criteria such as lighting, thermal, and acoustic conditions in their primary workspaces, i.e., offices. Employees' satisfaction with the facility (site, building, and interior) and the effect of the facility's physical environment on their perceptions of their work performance and health are included. Finally, a brief look at employees' commuting and physical activities within the building are also reported. The report provides descriptive information about employees' perceptions of the IEQ of their work environments. In addition, this information serves the broader development of knowledge regarding the influence of IEQ on employees.

2.0 Method

SPOES consists of a self-administered, Internet-based, questionnaire submitted to and completed by employees. The SPOES questionnaire has been tested for **validity (**measures what it is intended to measure) and **reliability (**repeatability or replicability of findings) in studies involving similar facilities and employees. Employees rate their level of satisfaction on a **Likert-type scale** (measurement scale) from 1 (very dissatisfied) to 7 (very satisfied) with IEQ of the facility and their primary workspaces. They also rate the influence of their physical environment on their perception of their work performance and health on a scale from 1 (hinders) to 7 (enhances). There were no physical measurements taken of environmental conditions such as temperature or acoustic level. This study is limited to employees' perceptions.

The report provides a descriptive summary of the results stated as a **mean** (M = average of all responses), **standard deviations** (SD) (how different scores are from each other and the mean), and **number of responses** (N) for questions analyzed. The mean for a 7-point scale is 4.00. Lower or higher means reflect stronger tendencies towards dissatisfaction/satisfaction and hinders/enhances. Means that are close to the center of the scale (4) are considered to be neither dissatisfied/hinders or satisfied/enhances.

When interpreting **mean** responses, the following labels were used:
1-3.99 dissatisfied (hinders)
4-4.49 neither satisfied (enhances) or dissatisfied (hinders)
4.5-7 satisfied (enhances)

An IEQ Score is also calculated for employees' satisfaction with IEQ in their primary workspaces. This is a statistical combination of all IEQ scores, which results in a single IEQ score for all employees on all IEQ variables and is reported in an IEQ Scorecard.

2.1 Description of the Questionnaire

Employees first rate their level of satisfaction with the facility and the influence of their physical environment on their perception of their work performance and health. Then they respond to questions about their satisfaction with their primary workspaces in relation to the IEQ criteria. The questionnaire uses the IEQ criteria from the B3 Guidelines and relates each of them to employees' satisfaction with their physical environment. Additional questions are also asked to delve deeper into IEQ conditions at the primary workspace.

Criteria include (in alphabetical order):

1. Acoustic Conditions
2. Appearance
3. Cleaning and Maintenance
4. Daylighting Conditions
5. Electric Lighting Conditions
6. Function
7. Furnishings
8. Indoor Air Quality
9. Lighting Conditions
10. Personal Adjustability Conditions
11. Privacy
12. Technology
13. Thermal Conditions
14. Vibration and Movement
15. View Conditions

2.2 Limitations

Employees' participation is voluntary, and responses are self-reported. As is true with all survey research, the responses indicate employees' perceptions. There were no physical measurements, e.g., temperature, humidity, or lighting levels, of the environment taken.

3.0 Sample Description

3.1 Building Description

The ACSO facility is located at 13301, Hanson Boulevard, Andover, MN. The building (see Figure 1) is the home of the Anoka County Sheriff's Office and includes the Civil and Transport Units, Criminal Investigation Division, Records Management, Sheriff's Administration, and related support functions. The facility also provides space for the Anoka, Sherburne, and Wright County Regional Forensic Lab, underground parking for squad cars, property storage (evidence room), and a fitness room. Offices, laboratories, training rooms, and common spaces are distributed across three floors encompassing 135,500 square feet.

Figure 1. Anoka County Sheriff's Office (Photo: Anoka County Sheriff's Office)

3.2 Description of Respondents

The ACSO has approximately180 employees and 20 volunteers at this location. The response rate to the questionnaire was approximately 21%. Of those responding, 54.5% were male and 43.8% were female. The mean age of respondents was slightly over 46 years, with a range of 30 to 60 years.

The ACSO was headquartered at the Anoka County Courthouse prior to relocating to the current site in 2010. Since that time, 80.6% of the respondents reported that they had worked at the new ACSO facility for more than 3 years, 9.7% had been there 2-3 years, 6.5% had been there for 1-2 years, and 3.2% of the respondents spent less than 1 year at this site. Relating to hours worked during a typical week at ACSO, 62.5% of the employees reported they spend 40+ hours a week in the ACSO facility; 18.8% spend 30-40 hours a week at ACSO; 9.4% spend 20-29 hours at ASCO; and 9.4% spend less than 20 hours in the ACSO facility. Relating to the percentage of time employees spend per week in their primary workspace, 46.9% of the employees reported they spend more than 75% of their time per week in their primary workspace; 37.5% spend 51-75% of their time per week in their primary workspace; 9.4% spend 25-50% of their time per week in their primary workspace; and 6.3% spend less than 25% of their time per week in their primary workspace.

The ACSO is a workplace environment with private offices, shared offices, workstations (cubicles), and laboratories serving as primary workspaces. Results indicated 56.3% of the employees had private offices, 12.5% share private offices with others, 9.4% work in a cubicle (enclosed by partitions), 3.1% work at a desk in an open area, and 3.1% work in a laboratory setting. Employees also indicated that 60.6% of their primary workspaces were located within 15 feet of an exterior window.

4.0 Findings and Discussion

4.1 ACSO Facility (Site, Building, and Interior): Overall Satisfaction, Work Performance, and Health

Employees responded to questions concerning the ACSO facility (site, building, and interior) and their overall satisfaction with the facility, overall perceptions of their work performance in relation to the facility, and their overall perception of their health in relation to the facility. Results indicated that employees were satisfied (M= 5.88) with the ACSO facility (building, site, and interior). They reported that their overall work performance was enhanced (M = 5.15) by the facility as well as their overall health was enhanced (M = 5.0). Table 1 and Figure 2 show a summary and interpretation of their responses.

Table 1. Overall satisfaction, work performance, and health related to the ACSO facility

ACSO Facility (site, building, and interior)	Mean (1-7)	SD	N	Interpretation
Overall satisfaction	5.88	1.27	33	Satisfied
Overall work performance	5.15	1.56	33	Enhances
Overall health	5.00	1.25	33	Enhances

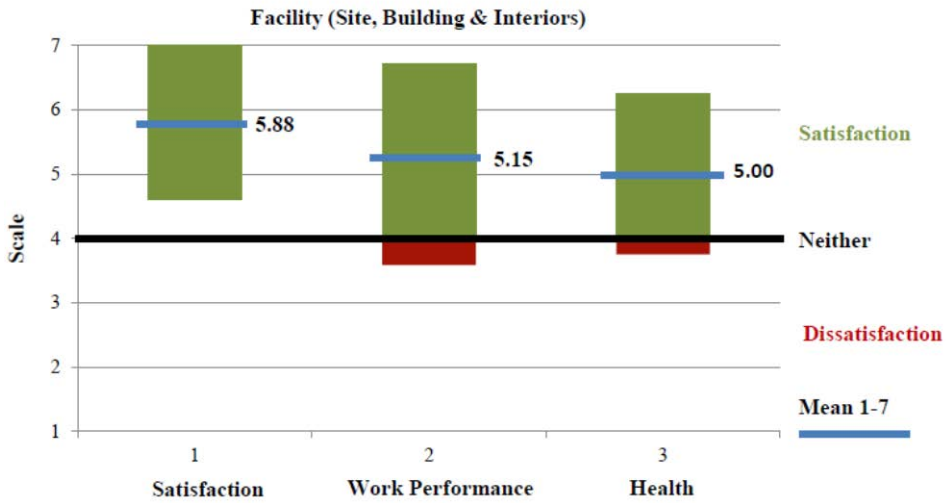

Figure 2. Overall satisfaction, work performance, and health related to the ACSO facility

4.2 Primary Workspace: Overall Satisfaction, Work Performance, and Health

Employees responded to questions concerning their overall satisfaction and overall perceptions of their work performance and health as related to their primary workspace (e.g., private office, workstation, or other primary workspace). Table 2 and Figure 3 show a summary and interpretation of their responses. Results indicated that employee were satisfied (M = 5.6) with their primary workspace, their overall work performance was enhanced (M = 5.34) by their primary workspace, and their overall health was neither enhanced nor hindered (M = 4.78) by their primary workspace.

Table 2. Overall satisfaction, work performance, and health related to primary workspace

Primary Workspace	Mean (1-7)	SD	N	Interpretation
Overall satisfaction	5.60	1.50	32	Satisfied
Overall work performance	5.34	1.62	32	Enhances
Overall health	4.78	1.50	32	Enhances

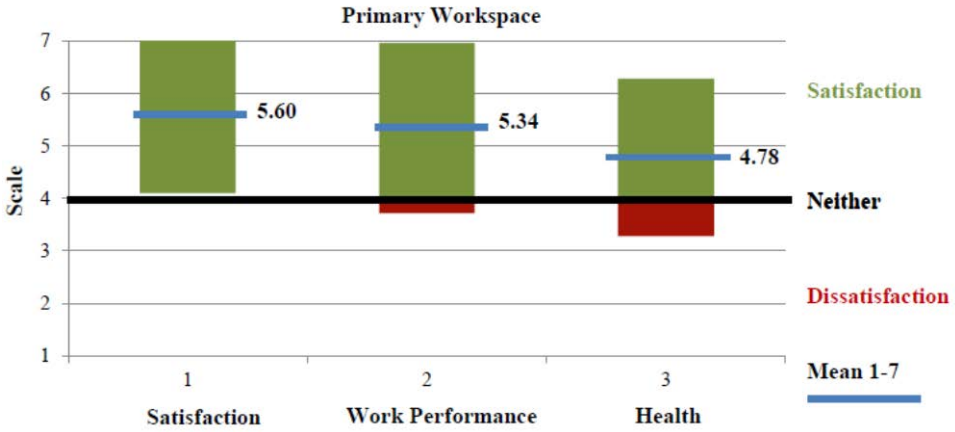

Figure 3. Overall satisfaction, work performance, and health related to primary workspace.

4.3 Primary Workspace: Satisfaction with Indoor Environment Quality (IEQ)

Employees responded to questions concerning their satisfaction with IEQ criteria (thermal conditions, indoor air quality, acoustic conditions, etc.) related to their primary workspace (e.g., private office, workstation, or other primary workspace). Most of the criteria relate to an overall condition, however some criteria such as thermal conditions include additional questions about temperature, humidity, and air velocity to delve deeper into selected criteria. Table 3 and Figure 4 show a summary of the means, the standard deviations, and interpretation of their responses.

Table 3. Satisfaction related to IEQ in primary workspace

IEQ Criteria		Mean (1-7)	SD	N	Interpretation
1.	Appearance (aesthetics)	5.81	1.23	32	Satisfied
2.	Function	5.53	1.37	32	Satisfied
3.	Vibration and movement	5.53	1.65	32	Satisfied
4.	Furnishings	5.44	1.41	32	Satisfied
5.	Technology	5.44	1.11	32	Satisfied
6.	Electric lighting conditions	5.44	1.63	32	Satisfied
7.	Amount of electric lighting	5.38	1.70	32	Satisfied
8.	Lighting conditions	5.31	1.73	32	Satisfied
9.	Ability to hear desired sounds	5.22	1.70	32	Satisfied
10.	Daylighting conditions	5.10	1.77	30	Satisfied
11.	Ability to limit undesired sounds	5.09	1.77	32	Satisfied
12.	Privacy	4.94	2.03	32	Satisfied
13.	Amount of daylighting	4.94	2.10	31	Satisfied
14.	Adjustability of your task lighting	4.81	1.84	32	Satisfied
15.	The overall acoustic quality	4.81	1.96	32	Satisfied
16.	The adjustability of the daylighting	4.81	2.06	31	Satisfied
17.	View conditions	4.75	2.08	32	Satisfied

18.	Indoor air quality	4.69	1.96	32	Satisfied
19.	Cleaning and maintenance	4.56	1.74	32	Satisfied
20.	Air velocity (drafty or stagnant)	4.50	1.87	32	Satisfied
21.	Adjustability of the electric lighting	4.29	1.97	31	Neither D or S
22.	Humidity (dry or moist)	4.16	1.71	31	Neither D or S
23.	Temperature (hot or cold)	4.09	1.67	32	Neither D or S
24.	Thermal conditions	4.03	1.64	32	Neither D or S
25.	Adjustability - thermal conditions	2.87	1.77	31	Dissatisfied

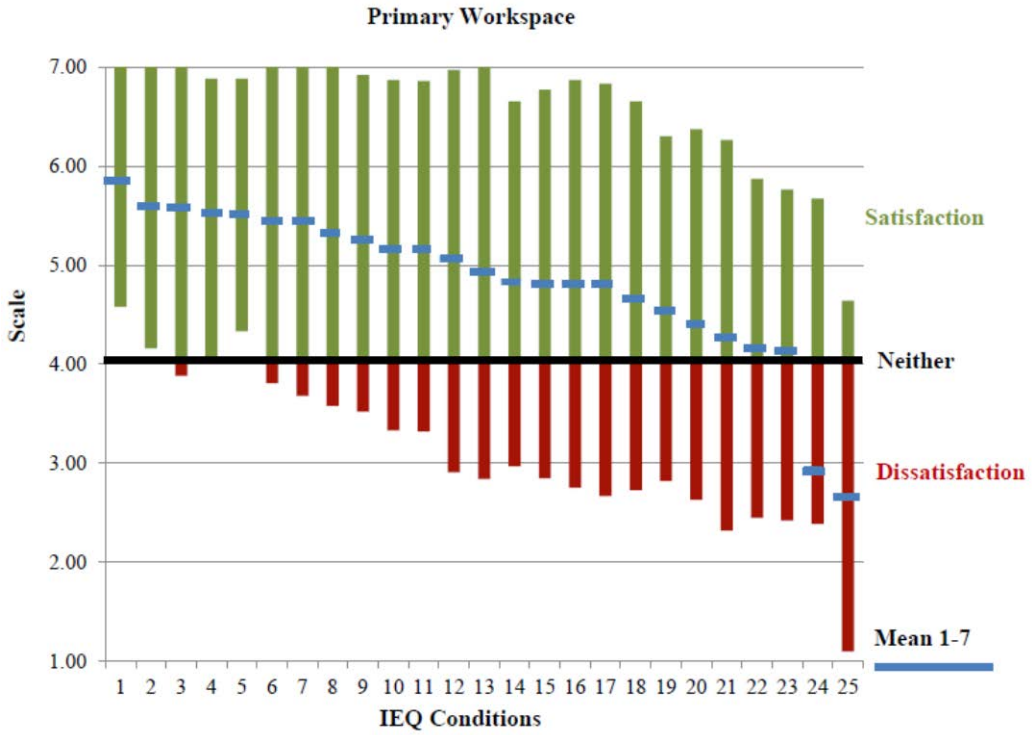

Figure 4. Satisfaction with IEQ criteria with the primary workspace

Results indicate that employees were satisfied with the following IEQ criteria in their primary workspaces:

- Appearance (aesthetics)
- Function
- Vibration and movement
- Furnishings
- Technology
- Electric lighting conditions
- Amount of electric lighting
- Lighting conditions
- Ability to hear desired sounds
- Daylighting conditions
- Ability to limit undesired sounds
- Privacy
- Amount of daylighting

- Adjustability of your task lighting
- The overall acoustic quality
- The adjustability of the daylighting
- View conditions
- Indoor air quality
- Cleaning and maintenance
- Air velocity (drafty or stagnant)

Employees were neither dissatisfied nor satisfied with IEQ criteria for the following:

- Adjustability of the electric lighting
- Humidity (dry or moist)
- Temperature (hot or cold)
- Thermal conditions

Employees were dissatisfied with IEQ criteria for the following:

- Adjustability of the thermal conditions

4.4 IEQ Satisfaction Scorecard

The IEQ Satisfaction Score is determined by developing weighted factors of all criteria, which is more representative of an overall IEQ score. For example, it might be more important for an employee to have satisfying thermal conditions than to have satisfying indoor air quality. Thus, if the employee gives a high thermal satisfaction score and a lower indoor air quality satisfaction score, the overall IEQ satisfaction will be scored much higher than one with the inverse statistics.

The weighted scoring system was developed by employing the following procedures. **Factor analysis** (a multivariate statistical procedure) was conducted to determine the importance of various IEQ criteria. The factor loading of selected IEQ criteria was regarded as the individual weight. The weighted sum score was used to calculate the final mean score illustrating how well a particular building performed in terms of satisfying its occupants' IEQ needs. This becomes the IEQ Score. As shown in Figure 5, the IEQ satisfaction score for ACSO is 5.05.

Figure 5. IEQ satisfaction score for ACSO.

Overall, the occupants showed a positive response but low level of satisfaction with the overall IEQ score, as indicated by the weighted mean score of 5.05. Function was identified as the criteria that contributed most to the IEQ Satisfaction Score, followed by Vibration and Movement and Privacy (sound and visual privacy). They determine IEQ satisfaction more strongly than other criteria. Overall Cleaning and Maintenance, Thermal Conditions, and Technology were the least contributing criteria to the IEQ Satisfaction Score.

The IEQ mean score of 5.05 validates the overall satisfaction (Table 2) mean score of 5.6 with the primary workspace. Both scores indicate levels of satisfaction with the primary workspace, however, the IEQ Score is lower as it may reflect some other factors beyond IEQ such as satisfaction or dissatisfaction with other considerations. e.g., the location or size of primary workspace. The IEQ Score gives us more refined knowledge.

5.0 Physical Activity Engagement and Commuting Practices

In the final section of the survey, employees responded to questions regarding their overall physical activity while at ACSO (site, building, and interior) and their commuting practices.

5.1 Physical Activity Engagement

Providing employees with opportunities for alternative paths of travel around the workplace, e.g., taking stairs as opposed to the elevator or access to a fitness facility, gives opportunities to engage in additional types of physical activities, which can be associated with healthier lifestyles.

Table 4. Overall physical activity (walking, stair use, etc.) affected by the ACSO facility

ACSO facility (Site, building, and interior)	Mean (1-7)	SD	N	Interpretation
Overall physical activity (walking, stair use, etc.)	5.71	1.01	31	Enhances

Results indicated that employees felt that ACSO enhanced (M = 5.71) their physical activities (walking, stair use, etc.). Further, of the 31 respondents to this set of questions, 87.1% said they were satisfied with the facility's influence on their overall physical activity; 12.9% said they were neither dissatisfied nor satisfied; and no employees were dissatisfied.

5.2 Commuting Practices

Employees' commuting practices examine primary modes of travel, commuting distance traveled, and the ability to use alternative modes of commuting. These data provide important information about commuting practices that enable researchers to track employees' commuting practices and assess the impact on the carbon footprint across all project types. Although commuting practices do not fall under the IEQ guidelines, they are addressed in the B3 Guidelines.

The ACSO is located in the city of Andover, MN, just north of Coon Rapids, east of Anoka, and west of Blaine. The location is not adjacent to public transit (i.e., light rail, the North Star Service, or public transit). Additionally, there are currently no metro or local bus service stops identified at or near the ACSO location.

Table 5 provides results on employees' primary mode of transportation; Table 6 summarizes commuting distances between home and the ASCO facility; and Table 7 summarizes employees' ability to commute using alternative choices (walk, public transit, bike, van, or carpool, etc.).

Table 5. Commuting Practices - Primary mode of transportation

Commuting Transportation Mode	**Drive alone (or with children < 16)**	**Motorcycle / moped**	**Combo drive/bike**
Primary mode of transportation	93.8 %	3.1%	3.1%

Related to primary modes of transportation, 93.8% of the employees drive alone (or with children under 16), followed by 3.1% use a motorcycle or moped, and 3.1% use a combination of commuting options (e.g., driving and biking).

Table 6. Commuting Practices – Distance traveled

Commuting distance: miles traveled	**0-5 miles**	**6-15 miles**	**16-30 miles**	**31-45 miles**	**46-60 miles**
Home-to-ASCO (One-way)	18.8 %	50.0%	21,9%	6.3%	3.1%

Results indicated that 18.8 % of the employees commuted 0-5 miles one-way between home and the ACSO, followed by 50.0% commuted 6-15 miles, 21.9% commuted between 16-30 miles, 6.3% commuted between 31-45 miles, and 3.1% commuted between 46-60 miles.

Table 7. Commuting practices – ASCO location and alternative commuting behaviors

Alternative commuting practices	**Mean** (1-7)	**SD**	**N**	**Interpretation**
Ability to commute in an alternative ways	3.47	2.05	32	Hinders

Results indicated that employees were **hindered** (M = 3.47) by the location of the ACSO in their ability to commute to work in alternative ways, e.g., walk, bicycle, public transit, van or carpool, etc. Further, of the 32 respondents to this set of questions, 53.1% said the location **hindered** their commuting options, 25% indicated the location **enhanced** their ability for alternative commuting, and 21.9% indicated that the location **neither hindered or enhanced** their ability to commute in alternative ways.

6.0 Conclusions

6.1 Summary

A post-occupancy evaluation was conducted of employees of ACSO approximately three years after it was first occupied. Of the 180 employees at ACSO, approximately 21% of the staff responded to the survey.

The survey included questions related to employees' overall satisfaction with the facility (site, building, and interior) and influence of the facility on their overall work performance and health. Employees were satisfied with the facility (M = 5.88); they found the facility enhances their overall work performance (M = 5.15) and enhances their overall health (M = 5.0). In addition, similar results were noted when employees were asked these same questions about their primary workspaces (private office, shared office, laboratory, etc.). Employees indicated an overall satisfaction (M = 5.60) with their primary workspaces and their overall work performance (M = 5.34); health (M = 4.78) was enhanced by their

primary workspace. As the range of scores was from 1-7, scores that showed satisfaction are in a low (health) to mid-level range, although still positive.

Most of the survey questions related to employees' satisfaction with the IEQ criteria in their primary workspaces (private office, laboratory, etc.). Employees' responses showed they were satisfied with the majority of the IEQ criteria. The results indicate a moderately high level of satisfaction with some IEQ criteria [appearance (aesthetics) (M = 5.81)] and a low level of satisfaction with other IEQ criteria [air velocity (drafty or stagnant) (M = 4.5)]. Employees responded that they were neither dissatisfied nor satisfied with the following IEQ criteria: adjustability of the electric lighting (M = 4.29), humidity (dry or moist) (M = 4.16), temperature (hot or cold) (M = 4.09), and thermal conditions (M = 5.03). The mean scores falling in this area are mid-range scores between satisfaction and dissatisfaction. Lastly, employees indicated dissatisfaction with adjustability of thermal conditions (M = 2.87).

From the employees' responses, an IEQ Score was developed and shows respondents' satisfaction with level with all criteria and the contribution of each criteria to that satisfaction score. For ACSO, the IEQ Satisfaction Score was 5.05, with satisfaction with function, vibration and movement, and privacy of their workspaces as the three criteria that influenced employees' satisfaction level most. This score reflects the moderate satisfaction level of the other criteria. Cleaning and Maintenance, Thermal Conditions, and Technology were the least contributing criteria to the IEQ Satisfaction Score.

Tne final section of the survey examines employees' physical activity and commuting practices. Employees reported that ACSO enhances (M = 5.71) their physical activity, which is one of the sustainable design criteria that influence occupants' behavior. Employees' commuting practices showed that most drove alone (or with children under 10) (93.8%), and 50% of the employees commuted between 6-15 miles between home and the ASCO. Lastly, employees indicated that the location of the ASCO facility hindered (M = 3.47) their ability to commute in alternative ways.

6.2 Recommendations

The satisfaction scores are certainly in the positive direction, however, improvement may be possible. For IEQ criteria that have physical measurement possible, e.g., thermal, acoustic, and lighting, it is recommended that these measurements be taken in both overall workspaces and primary, individual workspaces. Recommendations follow:

Thermal Conditions

- Determine special thermal comfort requirements or problems that may be encountered in the building due to work activities or sitting or design considerations.
- Determine if any task areas differ now from original intent.
- Review conditions that affect thermal comfort using ASHRAE Standard 55-2004 or Human Factors Design Handbook.
- Measure performance variables on site.
- Log complaints related to thermal conditions.
- Consider how to increase adjustability of thermal conditions for individuals.

Lighting Conditions

- Identify performance criteria that are to be met to achieve goals.
- Determine if any task areas differ now from original intent.

- Develop additional quality lighting criteria as needed for special facility issues such as employees' ages, duration of task, influence of daylight quality or quantity.
- Conduct onsite measurements using Illuminating Engineering Society standards for employees' tasks.
- Log complaints related to lighting conditions.

Acoustic Conditions

- Identify acoustic criteria for overall requirements.
- Determine if any task areas differ now from original intent.
- Develop any additional special acoustical performance requirements to support functional programming of building, e.g., sources of recurrent noise that need to be controlled, special user populations that may have distinct auditory performance limitations, or multiple uses of building spaces that may have different acoustic criteria. Investigate and choose appropriate acoustics modeling software for the project.
- Measure acoustic performance onsite with full systems running.
- Log noise and other sonic environment complaints.

Privacy Conditions

- Identify employees' privacy concerns via focus groups or log complaints.
- Determine if any task areas or responsibilities differ from ordinal intent.
- Consider adding noise masking equipment and/or visual screening depending on nature of complaints.
- Compare acoustic privacy problem areas with acoustic measurements to pinpoint specific problem areas.

Personal Adjustability

- Determine if adjustability issues arise with temperature, lighting, or furnishings via focus group.
- Identify personal, individual problem areas and relate to other IEQ issues via log of complaints.
- Provide education to employees about adjustability of any applicable adjustment options, e.g., furnishings, air diffusers, lighting, temperature control, etc.

It seems obvious that employees' satisfaction can be improved by addressing the criteria that had 'dissatisfied' or 'neither dissatisfied nor satisfied' scores. The above recommendations can help address change in these criteria. The areas employees were dissatisfied with (ability to limit undesired sounds, overall privacy, and adjustability of thermal conditions) can all be addressed by the above recommendations. Exploring these areas in more detail and making adjustments may increase overall satisfaction at the primary workspace.

This study investigated employees' satisfaction with the facility and primary workspaces. IEQ satisfaction is individual, but the results of the survey show a central tendency of moderate satisfaction to satisfaction with the facility and most of the IEQ criteria. Through additional research, e.g., employee focus groups, the results can be used as a diagnostic tool to aid in improving IEQ criteria for employees and to set the benchmarks from which improvement can be measured in the future.

Appendix A. Open-Ended Responses

Employees had the opportunity to raise specific concerns on the overall facility and their primary workspaces. Important information can be gleaned from the open-ended responses. Qualitative responses can appear as the employees are satisfied or dissatisfied; it does not mean they represent the overall sentiment from employees.

ASCO Facility (Site, Building, Interior) - Overall Positive

Building Services Amenities

- Workout room is very nice to have and we do use it!
- Really, the ACPSC is a really nice facility to work in and I enjoy working in the facility.

Building Appearance

- The building is very nice and spacious. A nice place to work. I like that there is secured parking for employees.
- It is a beautiful building.
- This is a great building to work in!
- Our new Sheriff's Office building is awesome. Very well designed and nice place to work.
- It is a very nice building. Visually the space looks pleasing.

ASCO Facility (Site, Building, Interior) – Overall Concerns

Employees raised specific concerns with the ACSO facility relating to the following themes: acoustics, appearance, building services amenities (alternative commuting), lighting conditions, spatial layout / organization, thermal conditions. Several positive comments reflected employee's satisfaction with the building appearance, the workout room, and secured parking.

Acoustics

- (The second floor) All sounds echo.
- Noise all around you.

Appearance

- (The second floor) The area was painted too dark of a color - it is too large of a room for that color to be EVERYWHERE.

Building Services Amenities

- Alternative Commuting I wish I could ride a bicycle to work but I perceive it, currently, too hazardous to commute on a bicycle. If I could determine a safer route to ride I would bicycle to the ACPSC, but I still do not have access to a locker, to store clean clothing, shower equipment, etc., in the locker room that would permit me to use the shower facilities before reporting for duty.

Lighting Conditions

- Too dark, very hard on eyes, like being in a cave.

Spatial Layout / Organization

- If there are any complaints it is too big and there can be a disconnect between staff. But that is better than being too small and having staff feel compacted.

- The second floor area where typing is done has a very poor design for what the women in that area do.
- Couple things would have been more beneficial (at least of our division)-an exterior storage area (i.e., pole barn) for bulk evidence/vehicle storage. Also, a conference room that is much larger than our current conference rooms-there are many but they are all approximately the same size and it would be nice to have one large conference room.

Thermal Conditions
- (The second floor) The temperature is uncontrollable.

Primary Workspace - Concerns

ACSO employees raised specific concerns with their primary workspace relating to the following themes: appearance (aesthetics), acoustic, cleaning and maintenance, daylighting, indoor air quality (IAQ), lighting conditions, task lighting / furnishings, thermal conditions.

Acoustics
- Acoustics for hearing all sounds is poor.

Cleaning and Maintenance
- I'd like it if they would vacuum inside our cube space once a month or so???

Daylighting
- The positioning of the building to enhance natural sunlight can actually be an annoyance. In the morning it is not possible for guests in my office to face the windows as the light is too bright. The morning and early afternoon sun also creates a glare on my monitors making it necessary to keep my blinds closed most of the day on sunny days.

Overall Lighting Conditions
- Lighting is too high to be of help in the work space so we must have individual, many lights in the cubes.

Indoor Air Quality
- When there is marijuana in evidence intake, it smells up the entire building. It would be nice if that area was better ventilated.

Task Lighting / Furnishings
- My work desk/area and lighting are not adjustable. It is not ergonomically comfortable.

Thermal
- The inability to keep it at a constant temperature is very frustrating. Very humid in the summer; cold in the winter. It has been as low as 64 and as high as middle-high 70s in the area we are in.
- [The] county has heating and cooling on automatic setting, that doesn't work well in a 24 hour environment.
- The lab section in the basement is too dry (4 to 8% humidity) in the winter and too humid in the summer (65 to 85% humidity). Temperatures are always on the cold side. We have to run a dehumidifier in the summer to control the unreasonable amount of humidity in our section. The

hoods in the basement are always malfunctioning. The A/C and / or heat apparently don't run on the weekends or after hours which causes the extreme humidity ranges and temperature issues.

Appendix B. Glossary

Descriptive statistics
Statistics used to summarize large sets of data (i.e., means, frequencies, medians). Descriptive statistics describe only the sample under consideration and are not intended to infer results to the larger population.

Factor analysis
A multivariate statistical procedure that is used to identify and group together general dimensions or factors that underlie a large number of variables in a set of data. The procedure transforms the variables into new principal components or orthogonal factors. Variables within each factor are related to each other but have no relationship to variables in other factors.

Frequency
A descriptive statistic that provides information about how many of a particular response or measurement are observed.

Likert-type scale
A measurement technique, employed in questionnaires and interviews, that utilizes a range of standardized response criteria such as strongly agree, agree, etc.

Mean
The average score of a set of data calculated by adding all scores together, then dividing by the number of scores.

N
The number of subjects or participants responding to the questions in the study

Reliability
The repeatability or replicability of findings; the same results are produced each time. Instruments and procedures should produce the same results when applied to similar people in similar situations, or on a second occasion.

Standard deviation
A statistic used to measure the variability of a group of scores (how different scores are from each other and the mean). For example, if the range of scores is 1-7 and the mean (average) is 5.0 with a standard deviation of 1.0, then the scores are closely clustered around the mean, i.e., there is one unit of variation among all scores. If the mean was 5.0 and the SD was 3.0, there is a broader range of variation among the scores…a smaller SD means the scores are similar and the mean score is likely to be more accurate and more useful (this is better!).

Validity
The extent to which an instrument or procedure measures what it is intended to measure (internal validity). The generalizability of results to another population (external validity).