

# **Adoption, Health Impact and Cost of Smoke-Free Multi-Unit Housing Policies**

**New**

Supporting Statement

Part A--Justification

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## Overview

CDC proposes to (A) examine factors that facilitate or limit implementation of local policies to promote smoke-free multi-unit housing (MUH) facilities, and (B) characterize reductions in exposure to second-hand smoke (SHS) associated with different types of policies. Information will be collected at two points in time from sites that are implementing smoke-free policies (intervention sites) and sites that are not implementing local policies (comparison sites) in Los Angeles County, California. Information collection will include longitudinal survey, behavioral, biological and environmental data involving MUH residents. To obtain additional contextual information on the implementation of smoke-free MUH policies, CDC will also collect information from (i) MUH operators in sites that vary in terms of relevant state laws: LA County, Maine, Minnesota, and Florida, and (ii) focus groups of residents in Maine, Minnesota, and Florida.

## PART A: JUSTIFICATION

### A.1 Circumstances Making the Collection of Information Necessary

This is a new Information Collection Request (ICR) to conduct a study of the adoption and implementation of smoke-free policies in Multi-Unit Housing (MUH) apartment complexes as a method of reducing residents' exposure to Secondhand Smoke (SHS). OMB approval is being requested for two years.

SHS is defined as exposure to tobacco smoke by nonsmokers. SHS contains more than 4,000 chemicals of which at least 250 are harmful and more than 50 are carcinogenic (1). The Surgeon General's 2006 summary of literature on smoking has concluded that there is no safe level of exposure to SHS; even brief exposure can harm health (2). The health risks associated with cigarette smoking and exposure to SHS are well established and recognized as major contributors to the foremost causes of death in the United States (2). Numerous epidemiological studies have documented the link between SHS smoke and increased morbidity and mortality. The Surgeon General's report documents that over the past two decades, the scientific, engineering and medical literature have established a wide range of adverse health effects from SHS, including cardiovascular disease, lung, breast and nasal sinus cancer, asthma and other respiratory illnesses, low birth weight, and sudden infant death syndrome in newborns. SHS exposure is estimated to result in \$5 billion a year in direct medical costs and an additional \$5 billion in indirect costs in the U.S. each year (3, 4).

Smoking in residential settings presents serious and substantive health hazards as well as significant challenges in protecting the health and wellbeing of residents. Individuals who choose to make their own units smoke-free, but reside in close proximity to one another in MUH facilities, are vulnerable to compromised air quality from the routine operation of heating, ventilating and air conditioning systems that can distribute SHS throughout a building. MUH includes public or private buildings, or portions thereof, containing two or more dwelling or other housing units. Approximately 79 million Americans reside in MUH, which comprises nearly 26% of all housing in the U.S. (5).

Over the past 25 years, Federal, state, and local government actions to protect the public from SHS exposure have increased in public areas, but few of these actions have included mandatory restrictions on smoking in personal living spaces. Rather, most policies (i.e., laws and the local ordinances that implement them) apply to workplaces, restaurants, bars, playgrounds, doorways and other locations. The efficacy of smoke-free policies in public spaces (workplaces, restaurants, transportation, etc.) resulted in a 70% decrease at the national level in serum cotinine concentrations from 1988 to 2002 (6). Reduction in adult self-reported asthma symptoms and improvements in pulmonary function were seen in as few as eight weeks after implementation of smoke-free policies in a random sample of San Francisco bartenders (2, 7). An estimated net 12% reduction in English children's hospital admissions for asthma occurred after the first year of implementation of smoke-free public space policies in 2007 (8).

The Surgeon General's 2010 report recommends that: "States should enact legislation requiring leases for multiunit apartment buildings and condominium sales agreements to include the terms governing smoking in common areas and residential units. States and localities should also encourage the owners of multiunit apartment buildings and condominium developers to include nonsmoking clauses in these leases and sales agreements and to enforce them." (9). Throughout the U.S., the private sector has begun to institute smoke-free policies in MUH on a voluntary basis through changes in leasing agreements and advertising. However, these smoking restrictions have largely been limited to common areas and spaces, not individual dwelling units.

Cities within Los Angeles County are one of the few jurisdictions in the nation that have begun to adopt local ordinances that aim to control smoking in all MUH complexes, including the individual units. This effort is relatively new, and only seven cities have implemented such policies, with four taking effect in 2013, and one in 2014. However, an additional eight cities have begun the process to adopt or implement such ordinances in 2013. This provides a "natural experiment" to compare the enhanced effect of city ordinances compared to cities without current MUH policies.

CDC plans to conduct a series of projects designed to explore the potential impacts of smoke-free policies in MUH facilities. One project is a quasi-experimental pretest, posttest design study with an intervention group and a comparison group to explore changes in behavior and SHS exposure among residents in Los Angeles County. Other study components include surveys of MUH operators and residents, objective measures of air quality and SHS exposure, and focus groups with residents in three states with different policies. Data related to these factors are presently limited; therefore, the findings from this study have the potential to inform and improve process and outcomes of smoke-free MUH strategies in other states and localities. Few studies have investigated the broader impact of jurisdiction-wide strategies designed to protect individuals from SHS exposure in MUH complexes. The Surgeon General's Report concludes, "The scientific evidence indicates that there is no risk-free level of exposure to secondhand smoke. Millions of Americans, both children and adults, are still exposed to SHS in their homes and workplaces despite substantial progress in tobacco control. Separating smokers from nonsmokers, cleaning the air, and ventilating buildings cannot eliminate exposures of nonsmokers to second-hand smoke. However, eliminating smoking in indoor spaces fully protects nonsmokers from exposure to secondhand smoke." The Surgeon General's report does not state what magnitude of health outcome improvements can be expected in the home environment within a specific time frame once SHS is reduced.

CDC proposes to conduct a study to expand the evidence-base regarding the impact of jurisdiction-wide strategies in reducing the exposure for individuals from SHS (hereafter referred to as smoke-free policies), specifically the magnitude of the exposure, how exposures can be measured, and how exposures change when smoke-free policies are implemented in MUH facilities. The study will also examine the experience of facility operators and residents before a policy has been implemented and then again after implementation. In order to enhance the utility of the database for future analyses, CDC proposes to collect detailed data on housing characteristics in both the resident and operator surveys. Such detail can be used in future analyses to explore how housing characteristics (e.g. market rate versus subsidized, building size, or housing conditions) affect ease of implementation, resident engagement, etc. The results will be used to:

1. Inform CDC's understanding of the potential short-term impacts on resident exposure to SHS, and changes in knowledge and behaviors related to smoke-free housing policies. (See Table 1, Research Questions 1.1 and 1.2 below);
2. Provide a source of data for CDC's effort to model the potential cost-effectiveness of such policies (See Table 1, Research Question 2 below); and
3. Examine potential barriers and facilitators to the implementation of smoke-free policies to reduce SHS exposure in MUH complexes (See Table 1, Research Questions 3.1 and 3.2 below).

CDC is authorized to collect the information needed for this study by the American Recovery and Reinvestment Act (ARRA), Public Law 111–5 (**Attachment 1A**) and sections 301 (a) and 317 (k) of the Public Health Service Act (**Attachment 1B**). In response to this law, The Department of Health and Human Services (HHS) developed an initiative-- the Patient Protection and Affordable Care Act (ACA) (**Attachment 1C**) to revamp the U.S. healthcare system from primarily treating disease to maximizing health impact through prevention. While the ACA creates a number of special funding streams, the Act created a new Prevention and Public Health Fund in 2010, a repository designed to provide capital for national investment in prevention and public health programs designed to expand and sustain the necessary infrastructure to prevent disease, detect it early, and manage conditions before they become severe (**Attachment 1D**). CDC) is the primary Federal agency responsible for protecting health and promoting quality of life through prevention and control of disease, injury, and disability. CDC is committed to programs that reduce the health and economic consequences of the leading causes of death and disability, thereby ensuring a long, productive and healthy life for all people. It is vital to build the evidence base that can inform local actions to optimize prevention efforts and target populations rather than individuals in order to bring the greatest health benefits to the greatest number of people in need.

## **Privacy Impact Assessment Information**

### **Overview of the Information Collection System**

Information will be collected over a two-year period using a mixed method, quantitative and qualitative data collection approach to provide different insights into smoke-free housing policies.

To meet the study aims described above we will produce a series of case studies that incorporate data from various sites and data collection instruments (See Tables 1 and 2).



**Table 1 Overview of Research Questions and Study Methodology**

Study Aim/Evaluation Question	Specific Study Measures – we expect to see changes in the following variables between baseline and post-intervention data collection periods	Evaluation Question Hypothesis	Site of Data Collection	Design and Data Collection Instrument
1. Inform CDC’s understanding of the potential short-term impacts on resident exposure to SHS, and changes in knowledge and behaviors related to smoke-free housing policies.				
1.1 What is the impact of a required smoke-free MUH policy on MUH residents?	<ul style="list-style-type: none"> <li>a. Self-reported SHS exposure at home</li> <li>b. Adult and child salivary cotinine concentration</li> <li>c. Fine SHS particles(PM<sub>2.5</sub>) concentration in the home</li> <li>d. Cigarette consumption among adult respondents</li> <li>e. Quitting attempt among adult respondents</li> </ul>	Resident data in intervention cities will show greater reductions in self-reported SHS exposure in the home, adult and child salivary cotinine levels, PM 2.5 concentrations, and self-reported respiratory conditions at post-intervention than that found in comparison cities. Resident data in intervention cities will show greater reductions in cigarette consumption and attempts to quit.	LA County – multi-cluster stage sample of residents in 260 MUH complexes within intervention (130) and comparison (130) cities.	Pre-post quasi-experimental with intervention and comparison cities.  Resident data collected through MUH Resident Baseline Survey ( <b>Attachment 8A, Sections B, E, and G</b> ) and the MUH Resident Post-Intervention Survey ( <b>Attachment 9A</b> ), Protocol for Saliva Collection ( <b>Attachment 10A</b> ) and Protocol for IAQ Monitoring ( <b>Attachment 11A</b> ) and Airborne Particle Diary <b>Attachment 11A-1</b> )
1.2 What is the social impact of a required smoke-free MUH policy on MUH residents and operators?	<ul style="list-style-type: none"> <li>a. Residents’ knowledge, attitudes, and beliefs regarding SHS exposure</li> <li>b. Operators’ knowledge, attitudes, and beliefs about smoke-free MUH policies</li> </ul>	Operator data in intervention cities post-implementation regarding knowledge, attitudes, and beliefs will show more support for smoke-free MUH policies than that found in comparison cities.	LA County – multi-cluster stage sample of operators and residents in 260 MUH complexes within intervention (130) and comparison (130) cities.	Pre-post quasi-experimental with intervention and comparison cities.  Resident data collected through MUH Resident Baseline Survey ( <b>Attachment 8A, Sections C, D, and F</b> ) and the MUH Resident Post-Intervention Survey ( <b>Attachment 9A</b> ),  Operator data collected through MUH Operator Baseline Survey ( <b>Attachment 6A, B-E</b> ) and the MUH Operator Post-

				Intervention Survey ( <b>Attachment 7A</b> )
2. Provide a source of data for CDC's effort to model the potential cost-effectiveness of such policies.				
2. What is the cost of required MUH smoke-free policies?	<p>a. Smoking-related operation cost savings</p> <p>b. Smoking-related unit turn-over cost saving</p>	Operators in intervention cities will report a greater reduction in unit turnover costs post-implementation than that found in comparison cities.	LA County – multi-cluster stage sample of operators and residents in 260 MUH complexes within intervention (130) and comparison and (130) cities	<p>Pre-post quasi experimental with intervention and comparison cities</p> <p>Cost Data Collected through MUH Operator Baseline Survey (<b>Attachment 6A, Section F</b>) and the MUH Operator Post-Intervention Survey (<b>Attachment 7A</b>).</p> <p>Resident data collected through MUH Resident Baseline Survey (<b>Attachment 8A, Sections C, D, and F</b>) and the MUH Resident Post-Intervention Survey (<b>Attachment 9A</b>),</p>
3. Examine potential barriers and facilitators to the implementation of smoke-free policies to reduce SHS exposure in MUH complexes.				
3.1 What are residents' self-reported barriers to compliance and factors that support their involvement in MUH policy adoption, implementation and enforcement?		Descriptive data. There are no specific hypotheses tested.	<ul style="list-style-type: none"> <li>• 1000 adult residents in MUH complexes in LA County intervention (500) and comparison (500) cities sampled as described above</li> <li>• 120 adult residents of four MUH complexes each in Maine, Minnesota, and Florida</li> </ul>	<p>Adult focus group data collected in Maine, Minnesota, and Florida (<b>Attachments 13 A-B</b>) will be compared to data from LA County resident surveys</p> <p>MUH Operator surveys in Maine, Minnesota, and Florida (<b>Attachment 5A</b>) will be compared to the responses of LA County operator surveys</p>
3.2 What are operators' self-reported barriers to compliance and factors that support their involvement in MUH policy adoption, implementation and enforcement?		Descriptive data. There are no specific hypotheses tested.	<ul style="list-style-type: none"> <li>• 260 operators of MUH complexes in LA County intervention (130) and comparison (130) cities sampled as described above</li> <li>• Operators of four MUH complexes each in Maine,</li> </ul>	MUH Operator surveys in Maine, Minnesota, and Florida ( <b>Attachment 5A</b> ) will be compared to the responses of LA County operator surveys

			Minnesota, and Florida	
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## **Items of Information to be Collected**

The information collection instruments supporting this study include the following: MUH Operator Recruitment Telephone Script (see **Attachment 4A** for LA County and **Attachment 5A** for Minnesota, Maine and Florida); the MUH Operator Baseline Survey (**Attachment 6A**) and MUH Operator Post-Intervention Survey (**Attachment 7A**); the MUH Resident Baseline Survey (**Attachment 8A**) and the MUH Resident Post-Intervention Survey (**Attachment 9A**); a Protocol for Saliva Collection (**Attachment 10A**); a Protocol for Air Monitoring in MUH (**Attachment 11A**); a Resident Focus Group Telephone Screening Interview Script (**Attachment 12A**); a Resident Pre-Focus Group Demographic and Attitudinal Survey (**Attachment 13A**); and Focus Group Guides for MUH Residents (**Attachment 13B** will be used with Process-Oriented focus group discussions, and **Attachment 13C** will be used with outcome-oriented focus group discussions). See Table 2.

**Table 2 – Overview of Data Collection Instruments**

<b>Data Collection Instrument</b>	<b>Content/Section</b>	<b>Comments</b>
<p><b>MUH Operator Survey for LA County (Attachment 6A and 7A)</b></p> <p><b>MUH Operator Survey for Minnesota, Maine, Florida, Attachment 5A):</b></p>	<p>A. Property characteristics;</p> <p>B. Secondhand smoke-related issues experienced in the apartment complex;</p> <p>C. Existing smoking-related policies;</p> <p>D. Rationale for MUH with no current policies;</p> <p>E. Operator’s knowledge, attitudes, beliefs, and intentions regarding smoke-free housing policies;</p> <p>F. Smoke-free housing policy-related costs in the apartment complex; and</p> <p>G. Operator demographics.</p> <p>H. We also include a short visual assessment of the exterior and common areas of the buildings in each complex where operators are surveyed. This includes: presence of a designated exterior smoking area, proximity of the smoking area to windows and doors of the buildings, presence of cigarette butts or other smoking debris on the ground outside the entrance to the building, presence of receptacles for cigarette butts at the entry to the unit or in the designated smoking area, exterior and interior signs on smoking policies, smell of tobacco smoke in the hallways and other interior common spaces (e.g., entry foyer), proximity to highways, deterioration that can allow pests or moisture to enter the building, poor ventilation.</p>	<ul style="list-style-type: none"> <li>• Demographic and attitudinal information about the operators will be collected so that we can characterize respondents on the basis of age, sex, race, socio-economic status, and smoking history.</li> <li>• We also ask the MUH operators to provide copies of leasing agreements or other policy statements on their smoke-free policies. This is to provide proven examples of instances where these barriers were avoided, removed, or lessened.</li> <li>• The visual assessment provides objective data on residents’ compliance with policies and on factors that may independently trigger or exacerbate respiratory conditions.</li> </ul>
<p><b>MUH Resident Survey (LA County, Attachments 8A and 9A)</b></p>	<p>A. Housing characteristics and environment;</p> <p>B. Secondhand smoke exposure;</p> <p>C. Knowledge, attitudes and beliefs about secondhand smoke, housing policy implementation and enforcement issues;</p> <p>D. Smoking status and cessation behaviors among residents;</p> <p>E. Adult smoking-related illnesses</p> <p>F. Adult respondent characteristics; and a</p> <p>G. Children’s module, which contains a subset of</p>	<ul style="list-style-type: none"> <li>• Demographic and attitudinal information about the operators will be collected so that we can characterize respondents on the basis of age, sex, race, socio-economic status, and smoking history.</li> <li>• The visual assessment provides objective data on residents’ compliance with policies, behaviors in the home (generation of PM 2.5 through cooking or other activities, and factors that may independently trigger or exacerbate respiratory conditions.</li> </ul>

	<p>questions about health conditions and exposure to SHS based on the questions included in the adult component of the survey; demographic and attitudinal information about the residents.</p> <p>H. Visual observations of the living room, kitchen, and common areas are collected, to identify factors such as ventilation that permits SHS to move between units or the presence of other housing conditions that could adversely impact respiratory health, such as presence of mold or pests.</p>	<ul style="list-style-type: none"> <li>The survey gauges respondents' health status by inquiring into any existing respiratory health conditions that are associated with SHS exposure, including asthma, chronic obstructive pulmonary disease, sinusitis, allergies, and emphysema.</li> </ul>
<p><b>Saliva Cotinine Protocol (LA County, Attachment 10A):</b></p>	<p>To minimize use of invasive or uncomfortable procedures, swabs will be used to collect the saliva samples. Participants age six and older will be instructed on how to insert the swab under the front of the tongue. A children's swab, which has been specifically design to prevent choking, will be used for participants between the ages of two and five. Adult participants will be instructed in saliva collection using the children's swab and will assist in performing the procedure.</p>	<ul style="list-style-type: none"> <li>By measuring resident cotinine levels at baseline and follow-up of implementation of required smoke-free housing policies in the intervention cities and comparing them to resident cotinine results in the comparison cities, we are better able to characterize changes in SHS.</li> <li>This activity will be confined to adults and children over the age of two, who are able to comply with the instructions.</li> </ul>
<p><b>Indoor Air Quality (IAQ) (LA County, Attachments 11A and 11A-1):</b> Two data sheets are included in the protocol, one for collecting time-diary data (<b>Attachment 11A-1</b>) from household occupants and one for Field Data Collectors to use for collecting basic monitoring information on the timing, placement, and setup of equipment (<b>Attachment 11A</b>).</p>	<p>Field Data Collectors will place monitors in the main living area of each unit in the same location at baseline and follow-up for seven full days to capture a representative sample.</p> <ul style="list-style-type: none"> <li><u>Real-time TSI Sidepak AM510 PM2.5 monitor:</u> Provides <b>comparative</b> PM2.5 measures for peak and time-averaged concentrations. Analysis of peaks above background will provide control for ambient and non-SHS episodes (primarily cooking) and is less sensitive to certain confounding.</li> <li><u>Real-time Dylos DC 17000 particle counter:</u> Provides size specific identification of PM2.5 to segment data for source-specific periods with non-SHS peaks (cooking, incense, etc.). Works synergistically with time-diary.</li> <li><u>Time-activity diary:</u> Provides more highly time-</li> </ul>	<ul style="list-style-type: none"> <li>To reduce the burden of the air quality monitoring to the MUH residents, the pump noise of the monitors will be mitigated with muffling material in a plastic receptacle to eliminate annoyance for unit occupants.</li> </ul>

	<p>resolved activity data (than resident questionnaire) during actual 7-day air monitoring period; identification of SHS odor periods, non-SHS periods (cooking, other particle sources), ventilation, daily covariates (e.g., occupancy), peak analysis; allow for more control of confounding factors in data analysis.</p> <ul style="list-style-type: none"> <li>• <u>Integrated Filter Samples Nicotine and PM 2.5:</u> Provides calibration and validation for quality assurance in comparative and magnitude assessments for average and peak PM2.5 in homes and adjust monitor responses for different home source profiles (i.e., with cooking, SHS odor, other significant particle source, or combinations).</li> </ul>	
<p><b>Focus Groups: (Minnesota, Maine, and Florida, Attachments 12A, 13A, 13B, and 13C):</b></p>	<p>Four focus groups of up to 10 adults will be conducted in ME, MN, and FL. Residents will from MUH complexes whose operators were interviewed using Attachment 5A will be recruited to participate.</p> <p>Key Focus group questions (process-oriented)</p> <ul style="list-style-type: none"> <li>• Now let’s talk about how you decided to live in your apartment complex. What information was most important to you when you were deciding where to live?</li> <li>• What were your experiences with smoke-free policies in other apartment complexes?</li> <li>• How did your apartment complex’s smoking policy influence your decision to live there?</li> <li>• For those of you who were living here when the smoke-free policy was created, how did you feel about the residence going smoke-free?</li> <li>• If you weren’t involved in getting a smoke-free policy adopted in your building, or you moved in after it was in place, how did you hear about the policy?</li> <li>• What do you think your housing manager should do to make sure that the policy is working?</li> </ul>	<ul style="list-style-type: none"> <li>• For this study qualitative data will be collected via a limited number of interviews and focus groups in Maine, Minnesota, and Florida, in localities that have already adopted and broadly implemented smoke-free MUH practices either as a response to local regulations or voluntarily. This information will provide property managers who may be contemplating smoke free rules with role models who have faced and overcome the same/similar barriers to implementation.</li> <li>• The MUH complexes selected will include a mix of subsidized and market rate units, and smokers as well as nonsmokers.</li> <li>• A short attitudinal and demographic survey for participants is administered before the focus group starts in order to characterize respondents on the basis of age, sex, race, socio-economic status, health status, and smoking history and identify individual-level factors that might inform the responses to focus group questions.</li> </ul>

	<p>Key Focus group questions (outcome-oriented)</p> <ul style="list-style-type: none"> <li>• For those of you who have lived in your complex a while, what kind of other changes have you seen in the apartment complex since the policy started – such as greater cleanliness, less smoke in the halls , and more use of shared spaces like playgrounds, laundry rooms, etc.?</li> <li>• If you are a smoker, how has the smoke-free policy affected you? If you're a non-smoker, how has living in a smoke-free building affected you?</li> <li>• These next questions apply to everyone. How do you think you should be involved in making sure that residents and visitors don't smoke in areas where smoking is banned?</li> <li>• What do you think some of the benefits are of your complex's smoke-free policy? What do you think some of the drawbacks are?</li> <li>• Overall, how do you like living in a smoke-free apartment complex? What do you like most? What do you like least?</li> <li>• In general, what do you think are the most common problems encountered by people trying to get a smoke-free policy put in place in their apartment complex?</li> </ul>	
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Access to information in identifiable form will be limited to selected members of the study team and no data will be reported at the level where individual responses can be identified. These data are not disclosed to anyone who is not an authorized user, following the procedures outlined in Section A.10.B. Data collection forms will be designed to so that personally identifiable information (i.e., name, address, and phone number) can be separated from response data, and an identification number will be assigned to each respondent. Information will be collected by CDC's data collection contractor: Healthy Housing Solutions, and its subcontractors: Westat, and the Los Angeles County Department of Public Health/Tobacco Control and Prevention Program (LACDPH). Only senior members of CDC contractor/subcontractor staff will have access to the information in identifiable form. The study will be conducted according to a security plan approved by CDC's Office of the Chief Information Security Officer. An electronic data file containing personal identifiers and linkage information will be set up and stored in a password-protected computer in a locked room. Only authorized individuals can access this linkage file. After the data have been connected, personal identifiers will be deleted from the analytical database. No more than minimal risk will be posed to the privacy of participants.

### **Identification of Website(s) and the Website Content Directed at Children Under 13 Years of Age**

This ICR does not involve web-based data collection methods or refer respondents to websites. There are no websites with content directed at children less than 13 years of age.

### **A2. Purpose and Use of the Information Collection**

The information collected in all study sites (Los Angeles, CA, Maine, Minnesota, and Florida) will (1) provide critical information about the conditions that facilitate or limit establishing and implementing evidence based strategies to protect MUH residents from the ill effects of SHS in their housing units (hereafter known as smoke-free policies); and (2) characterize the reductions in SHS exposure associated with different types of policies. The results of this study should contribute to creating healthier communities through implementation of sustainable, evidence- and practice-based jurisdiction-wide strategies.

The justification for this design and data collection is as follows:

1. The study is both robust and multi-component, using a mixed-methods approach of both quantitative and qualitative methodologies to conduct case studies in four diverse locations.
  - a. Los Angeles County illustrates the effects of local smoke-free ordinances.
  - b. Maine, Minnesota and Florida are states with a longer history and different legal frameworks related to smoke-free policies in MUH: Maine and Minnesota have up to ten years of experience in implementing smoke-free standards affecting indoor air quality, whereas a Florida statute prevents local communities from enacting ordinances that are more restrictive than applicable state law. The resulting case studies will be able to illustrate the most often experienced, most challenging barriers to adopting and implementing smoke-free policies.
  - c. Qualitative research data provides a context for and broadens understanding of the LA County quantitative data. Qualitative data complement quantitative data by providing the "why" and the "how". It allows for the development of general theories

- about a specific group’s behaviors and decision making processes. Thus, it translates the quantitative findings and facilitates a more practical understanding. This enables us to provide a context for the LA County residents’ responses to **Attachment 8A**.
- d. The Maine, Minnesota, and Florida complexes sampled will contain a mix of public and market-rate housing. In contrast, the LA County implementation cities do not have public housing complexes. The U.S. Department of Housing and Urban Development has encouraged smoke-free public housing since 2009.
  - e. The Maine, Minnesota, and Florida focus group participants will contain a mix of smokers and nonsmokers. In contrast, the LA County residents will come from households where the tenants have implemented a smoke-free home policy. As a result, we anticipate fewer smokers among the LA County survey participants. The focus groups help to illustrate smokers’ reactions to smoke-free policies.
2. The unique “natural experiment” occurring in LA County cities supports a design with an intervention and comparison group.
    - a. We hypothesize that adoption and implementation of city ordinances will accelerate changes in knowledge and behavior. By collecting MUH resident data in a group of cities before the ordinances have been implemented at the level of the MUH complexes, and then nine months later, we are able to capture these additional effects. (These cities are hereafter known as the **intervention group**.)
    - b. However, there may be other reasons for decrease in smoking rates and exposure to a SHS among the MUH residents, such as advertising and other efforts to promote smoke-free policies by national, state, and local tobacco control programs’ technical assistance and educational campaigns. These changes will be captured by our **comparison group**.
  3. The LA County design is strengthened by collecting longitudinal survey, behavioral, biological and environmental data in both the intervention and comparison cities.
    - a. A comprehensive literature review failed to identify a single published study focused on MUH residents or operators based on an experimental or quasi-experimental design (i.e., pretest/posttest changes in smoking or other behaviors or costs resulting from the implementation of locally adopted smoke-free MUH ordinances in an intervention relative to control study condition).
    - b. While **Attachment 3A** reviews the literature on statistical power and effect sizes associated with adoption of smoking bans in indoor areas in the U.S. and Europe, there are no comparable data for MUH complexes in the U.S. related to reductions in SHS exposure, as measured by saliva cotinine or Indoor Air Quality of PM 2.5. Moreover, the available studies are based on repeated cross-sectional designs as opposed to the longitudinal design of the proposed study.
    - c. Longitudinal designs offer increased statistical power due to smaller standard errors as well as the capability to assess change within the subjects (i.e., individuals and MUH complexes) unlike repeated cross-sectional designs. Thus, the proposed study helps to develop robust estimates of statistical power.

- i. In this study, “**baseline**” refers to the data collection in intervention and comparison groups at a time prior to the effective date of implementation of city ordinances at the MUH level.
  - ii. “**Post-intervention**” data will be collected nine months after baseline data collection.
  - iii. We believe that reductions in SHS will be observable at nine months. This also increases our ability to retain participants in the study, since rental unit turnover increases after one year.
  
- 4. Sample sizes and sampling methodology in LA County provides power for this study.
  - a. The sample sizes proposed for the LA County quasi-experimental design are projected to detect changes in saliva cotinine and Indoor Air Quality with an 80% power for selected adult, child, and household measures, as reviewed in Supporting Statement Part B.
  - b. Within each of the selected LA County cities, a multistage cluster probability sampling design will be used to randomly select MUH complexes and units within complexes. The total sample sizes proposed for LA County data collection coupled with the qualitative data collected in the three other geographic areas, enable us to provide more nuanced descriptions of MUH operators’ and residents’ experiences with policy implementation to reduce SHS exposure (see Table 3). The data also enable us to better characterize differences in experience based on type of policy, size of MUH complex, and such factors as operators’ and residents’ sense of engagement in policy development.
  - c. Since the primary purpose of this study is to detect changes in SHS exposure and occupants’ knowledge and behavior, we do not intend to oversample residents based on selected health characteristics. The survey does assess selected respiratory health outcomes associated with SHS exposure, including prevalent asthma and chronic obstructive pulmonary disease. This information will be used for the purposes of gauging respondents’ health status, and the data will be treated as covariates in analyses alongside other demographic characteristics such as age, sex, and race.
    - i. This study will enable us to document changes in SHS exposure based on changes in enforcement of MUH smoking policies as well as reductions related to residents’ smoking cessation.
  - d. The sample size and methodology for the PM2.5 component of the study addresses methodological issues commonly found in the research literature, and support power calculations that could not be obtained through prior studies.
    - i. The housing units randomly sampled are those where the tenants have instituted their own smoke-free policy, as well as complying with MUH complex policies. This enables us to detect SHS exposure from surrounding units.
    - ii. In previous MUH studies, PM2.5 has been shown to travel from smoking units to other units in substantial quantity (13, 14, 15, 16, 17, 18). In MUH settings, reliably capturing SHS events requires monitoring for multiple days. Real-time (continuous) particle samplers can operate reliably for many days at a time and

can be used to measure average and peak exposures, and to identify and examine key episodes in the time series.

- iii. The MUH study uses established methods for real-time and integrated (filter) particle sampling of PM<sub>2.5</sub> and nicotine sampling. In particular, the TSI Sidepak real-time particle monitor has been tested thoroughly (19) and used in many SHS monitoring studies, and the Dylos particle counter has been positively evaluated (17, 18, 19). Standard procedure requires that the real-time monitors (Sidepak and Dylos) are tested and calibrated in the laboratory against standards for SHS. However, calibration factors for PM<sub>2.5</sub> measurements vary by the type of aerosol (SHS, cooking, dust, etc.) (20). Hence, field calibration for site-specific aerosol profiles in homes is an important quality assurance component of this study.
  - iv. In applications where SHS-related concentrations are of interest for outcome measures, real-time SHS particle monitors are well-suited for controlling for non-SHS events by allowing for peak analysis and identifying source-specific time intervals. SHS identification can be accomplished through time-activity diaries and particle size fingerprinting of individual peaks. In contrast, integrated filter-and-pump measures cannot control for different dynamic particle sources present during monitoring.
  - v. In recent work performed at Stanford University, the ability to fingerprint aerosol levels using size-specific characterization has been demonstrated (17, 18). An inexpensive particle counter, such as the Dylos, has been shown to correlate well with the Sidepak (19) and to provide useful size-discriminating information for SHS and other particle sources (17, 18).
  - vi. We anticipate that nicotine will be useful to verify the presence or non-presence of SHS in homes and will inform other types of analysis, including validation and calibration of real-time particle monitors in homes with and without SHS intrusion.
5. This study proposes to identify costs of unit maintenance pre-implementation of a smoke-free policy. These costs will be compared to costs of implementation to the complex as a whole (e.g., time, training, lease amendments, and advertising) with the costs of unit maintenance post- implementation.
- a. There are relatively few studies that have collected data on the costs of unit turnover after a smoker has left an apartment, and even fewer that collect comprehensive data on the costs of implementation and enforcing smoke-free-policies (26, 27, 28). These studies show wide variability in cost estimates and methodology. The limitations of available data and research illustrate the need for critical information that would be collected for the analysis planned for Los Angeles County. The data collected through this study represent a unique contribution to the field.
  - b. Despite the limitations described below, Ong's (26) study estimates are better documented than other data commonly cited in education and advocacy materials promoting smoke-free MUH policies. We have used Ong's cost-related questions as the basis of many of our survey questions in Section F of **Attachments 5A, 6A, and 7A.**

- i. HUD cites data on smoking unit turnover costs as part of its toolkit for public housing managers on implementing smoke-free policies. These data are from “Smoke Free Housing New England, “a consulting group with the mission to eliminate involuntary exposure to secondhand smoke” (27), but the source document lacks data on the sample size and how costs were measured.
    - ii. There are also widely cited estimates from Kennedy Restoration Company that restoring a two-bedroom apartment after a smoker moves out can cost up to \$15,000, (28) but there does not appear to be any evidence-based research to support this cost estimate or the need to engage in all the restoration activities associated with this cost estimate.
  - c. Based on our pilot experience, MUH operators collect and organize their cost records according to the categories of costs specified in Section F of the operators’ questionnaire. Thus, we expect to provide comprehensive and robust data that will be appropriate for comparisons to other locations in the future.
    - i. In the case of landlord costs, Ong (26) provides estimates for average smoking-related unit turnover costs, based on a survey of MUH operators, but the extent of detail provided, and not provided, in this study makes it difficult to evaluate the reliability of the findings. Respondents were asked to “estimate smoking-related costs beyond standard operations that were incurred during the preceding 12 months”, but it is not clear if estimates were based on financial records or just rough guestimates. The authors acknowledge that “self-reported costs may be subject to recall bias, but respondents were notified before the survey that they would be asked about property costs, and they provided reasonable responses to the detailed financial questions.” The “detailed financial questions” remark appears to refer to cost categories that “included cleaning, repairs and maintenance, painting and decorating, trash collection, fire damage, property insurance, fire insurance, other insurance, legal costs, administrative costs, and other operating costs” but the study provides no detail by cost category, and no explanation for why the detailed financial questions were deemed “reasonable”. This study reported average smoking related costs per unit of \$282, but the average per unit was \$578 for small properties versus just \$87 for large properties.
    - ii. Ong’s multivariable analysis showed that the likelihood of incurring smoking-related costs at properties with a complete smoke-free policy versus properties without a smoke-free policy was only marginally significant. The data collected for the planned analysis for Los Angeles County will be based on MUH property records, with baseline and post-policy change data that will provide much better documented measures of unit turnover costs.

**Table 3. Proposed Sample Sizes**

	Los Angeles		Maine	Minnesota	Florida
	Intervention Cities	Comparison Cities			
Number of MUH complexes involved (sampling method)	130 (multistage cluster probability sampling design)	130 (multistage cluster probability sampling design)	4 (convenience sample)	4 (convenience sample)	4 (convenience sample)
Number of MUH operators interviewed using the MUH Operator Baseline and Post-Intervention Surveys. (Attachments 6A and 7A)	130 (interviewed during baseline and post-intervention data collection).	130 (interviewed during baseline and post-intervention data collection).	4 (interviewed once in 2014 using Attachment 5A Survey.	4 (interviewed once in 2014 using Attachment 5A Survey.	4 (interviewed once in 2014 using Attachment 5A Survey.
Number of MUH residents interviewed using the MUH Resident Baseline and Post- Intervention Surveys. (Attachments 8A and 9A)	500 adults (interviewed at baseline and post - intervention data collection).	500 adults (interviewed at baseline and post - intervention).	0	0	0
Number of cotinine saliva samples collected. (Attachment 10A)	Up to 500 adults; up to 250 children at baseline; repeat sample collection at post -intervention data collection	Up to 500 adults; up to 250 children at baseline; repeat sample collection at post -intervention data collection.	0	0	0
Number of units sampled for Indoor Air Quality and that complete a 7 day diary. (Attachments 11A and 11A-1)	100 (collected at baseline; repeat sample collection at post -intervention data collection).	100 (collected at baseline; repeat sample collection at post -intervention data collection).	0	0	0
Number of MUH residents participating in focus groups and completing a pre-focus group survey. (Attachments 13A, 13 B, and 13C)			40 (4 focus groups of 10 individuals each). Completed once in 2014.	40 (4 focus groups of 10 individuals each). Completed once in 2014.	40 (4 focus groups of 10 individuals each). Completed once in 2014.

## **Privacy Impact Assessment**

Access to information in identifiable form will be limited to selected members of the study team and no data will be reported at the level where individual responses can be identified. These data are not disclosed to anyone who is not an authorized user. Data collection forms will be designed to so that personally identifiable information (name, address, and phone number) can be separated from the data collection effort, and a serial number (i.e., ID code) will be assigned to the respondent and used as the principal means of record management. Only senior members of CDC's contractors/subcontractors project team will have access to the information in identifiable form. The project will be conducted according to an information security plan approved by CDC's Office of the Information Security Officer. An electronic data file containing personal identifiers and linkage information will be set up and stored in a password-protected computer in a locked room. Only authorized individuals can access this linkage file. After the data have been connected, personal identifiers will be deleted from the analytical database.

## **A3. Use of Improved Information Technology and Burden Reduction**

We have explored other existing datasets in LA County to determine whether resident health status data could be obtained without requiring a lengthy resident interview. Data are not available at the level of geographic specificity needed to match the location of the MUH complexes that will be studied.

We also explored the possibility of web-based or telephone surveys and determined they are not feasible for several reasons: 1) many of the residents we intend to survey do not have phone or Internet access; 2) we need to observe housing conditions as well as obtain residents' self-report; and, 3) we believe that in-person interviews will allow Field Data Collectors to build rapport with respondents and thus improve participation in the second round of surveys nine months later.

## **A.4 Efforts to Identify Duplication and Use of Similar Information**

While earlier federal funding through CDC's Communities Putting Prevention to Work initiative (CPPW) provided to the Los Angeles County Department of Health (LACDPH) resulted in an unprecedented opportunity to expand its smoke-free MUH policy efforts to reduce SHS exposure, funding constraints precluded using this initiative to conduct MUH research on the social, economic, and other impacts of the expected policy adoption and implementation. Further, while a recent comprehensive literature search showed that there is excellent MUH policy research being conducted using cross-sectional methods (21, 22, 23,24, 25 26), we could not identify a single published article using more rigorous research designs (e.g., quasi-experimental designs using a baseline and follow-up design strategy for an intervention group and a comparison group). In developing the study design, we conducted a literature search protocol that involved four stages, repeated on three separate occasions approximately three months apart. The primary search engine was Pub Med supplemented by Google.

In order to minimize response burden and to ensure consistency with other established survey efforts, we conducted extensive literatures searches, reviewed the CDC Smoking and Tobacco Use Question Inventory on Tobacco ( <http://apps.nccd.cdc.gov/qit/quickSearch.aspx>), obtained

the questionnaires and consulted with the authors of several of the major publications on smoke-free MUH policies (23,24,26) and adapted as many questions as possible from surveys developed by the federal government or state-based surveys such as the states' Behavioral Risk Factor Surveillance System (BRFSS). To minimize burden and to use questions previously tested with similar populations or housing types, the MUH Operator and MUH Resident questionnaires adapted questions from the sources described in Supporting Statement Part B.4 **and Attachment 3B**. A cognitive test of these modifications to existing survey questions was performed through the pilot of these questionnaires (see Supporting Statement Part B.4).

In identifying data collection resources for this study CDC's contractor, Healthy Housing Solutions, collaborated with internal teams from its subcontractors, Westat, and LACDPH. LACDPH has substantial experience in conducting tobacco control efforts, focusing on the adoption and implementation of local ordinances that support smoke-free policies to reduce SHS exposure since 2006 and more recently via funding through CDC's CPPW. These teams provided expert overview for the selection and modification of existing data collection sources to be used in this study. In addition CDC Subject Matter Experts (SME) have provided input to select and modify data collection sources (see A.8). These extensive efforts substantially reduce duplication of data that have been previously collected.

### **A.5 Impact on Small Businesses or Other Small Entities**

Small businesses may be part of this project, since we may randomly select owner-operators of MUH with fewer than 10 units, or fewer than 12 employees. The project attempts to minimize that burden by limiting the frequency of data collection to no more than twice in a year-long period and to an estimated total of no more than three hours of response burden per individual. There is no option to use a short form to collect the data. Questions are held to the absolute minimum required for the intended use of the data. Participation in the study is voluntary.

### **A.6 Consequences of Collecting the Information Less Frequently**

Without baseline and follow-up implementation on cost data, CDC will not be able to assess over time the cost benefits associated with particular evidenced-based strategies (i.e., local ordinances or administrative versus voluntary policies to protect MUH residents from ill effects of SHS exposure in their units). This analysis will provide vital information to inform decision-making and future resource allocation by assessing the actual costs of carrying out policy- and environmental change-focused strategies in an assortment of many communities and hard to reach, diverse populations. This information is crucial to the overall evaluation of the impact of these MUH policies and essential for future, successful program planning and implementation throughout the nation. There are only two periods of data collection proposed. Reducing the respondent burden below the estimated levels (e.g., reducing the frequency of the data collection) would diminish the utility of the study and inhibit the ability of CDC to respond to anticipated requests for cost data associated with this program. There are no legal obstacles to reduce the burden.

### **A.7 Special Circumstances Relating to the Guidelines of 5 CFR 1320.5**

This project fully complies with all guidelines of 5 CFR 1320.5. There are no special circumstances required.



## A.8 Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency

- A. As required by 5 CFR 1320.8(d), a 60-day notice for public comments on the proposed data collection activities was published in the Federal Register on **March 23, 2012, (Volume 77, Number 57, p. 17065-17066)**. A copy of the notice is included as **Attachment 2A**. One non-substantive public comment was received and acknowledge (see **Attachment 2B**).
- B. Healthy Housing Solutions, Westat and LACDPH consulted with MUH Operators and Residents through their pilot of the MUH Operator and Resident Surveys. They also consulted with persons inside and outside the study design team during development of the MUH Operator and Resident Surveys, specifically:

**Table 4. Subject Matter Experts at CDC Consulted for the Study**

<b>Name</b>	<b>Organization</b>	<b>Contact Information</b>
Brian King, PhD	Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion	Phone: 770-488-5107 baking@cdc.gov
Robin Soler, PhD	Division of Community Health, National Center for Chronic Disease Prevention and Health Promotion	Phone:770-488-5103 <a href="mailto:rsoler@cdc.gov">rsoler@cdc.gov</a>
Kristine Day, MPH	Division of Community Health, National Center for Chronic Disease Prevention and Health Promotion	Phone: 770-488-5446 <a href="mailto:kday@cdc.gov">kday@cdc.gov</a>
Margie Walling, PhD	National Center for Environmental Health	Phone: 770-488-0699 <a href="mailto:mwalling@cdc.gov">mwalling@cdc.gov</a>
Mary Jean Brown, ScD, RN	National Center for Environmental Health	Phone: 770-488-7492 <a href="mailto:mjb5@cdc.gov">mjb5@cdc.gov</a>

### List Of Individuals and Organizations Consulted for the Study

<b>Name</b>	<b>Organization</b>	<b>Contact Information</b>
Neil Klepeis, PhD, MS	Neil Klepeis and Associates	Address: 878 Rebecca Circle Aromas, CA 95004. Phone: 831-406-1088 Email: <a href="mailto:neil@exposurescience.org">neil@exposurescience.org</a>
Michael Ong, MD, PhD	Department of Medicine, General Internal Medicine and Health Services Research, University of California, Los Angeles	Address: UCLA Medical Plaza, Suite 420, Los Angeles, CA 90095 Phone: 310-794-0154

		Email: <a href="mailto:mong@mednet.ucla.edu">mong@mednet.ucla.edu</a>
UCLA ATS	UCLA Academic Technology Services, Statistical Consulting Services Group	Address: 4919 Math Sciences Building, University of California, Los Angeles, CA 90095 Phone: N/A Email: <a href="mailto:atsstat@ucla.edu">atsstat@ucla.edu</a>
Amy Lightstone, MPH	Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health	Address: 313 N. Figueroa St., Room 127, Los Angeles, CA 90012 Phone: 213-240-7785 Email: <a href="mailto:alightstone@ph.lacounty.gov">alightstone@ph.lacounty.gov</a>
Richardo Basurto-Davila, PhD, MSc	Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health	Address: 313 N. Figueroa St., Room 127, Los Angeles, CA 90012 Phone: 213-989-7127 Email: <a href="mailto:ribasurto-davila@ph.lacounty.gov">ribasurto-davila@ph.lacounty.gov</a>
Ning Rosenthal, PhD, MPH	Tobacco Control and Prevention Program, Project TRUST, Los Angeles County Department of Public Health	Address: 3530 Wilshire Blvd, Suite 800, Los Angeles, CA 90010 Phone: 213-427-4410 Email: <a href="mailto:nrosenthal@ph.lacounty.gov">nrosenthal@ph.lacounty.gov</a>
Lana Sklyar, MPH	Tobacco Control and Prevention Program, Project TRUST, Los Angeles County Department of Public Health	Address: 3530 Wilshire Blvd, Suite 800, Los Angeles, CA 90010 Phone: 213-427-4409 Email: <a href="mailto:lsklyar@ph.lacounty.gov">lsklyar@ph.lacounty.gov</a>
Donna Sze, MPH	Tobacco Control and Prevention Program, Los Angeles County Department of Public Health	Address: 3530 Wilshire Blvd, Suite 800, Los Angeles, CA 90010 Phone: 213-351-7339 Email: <a href="mailto:dsze@ph.lacounty.gov">dsze@ph.lacounty.gov</a>
Jillian Wong, MPH	Tobacco Control and Prevention Program, Los Angeles County Department of Public Health	Address: 3530 Wilshire Blvd, Suite 800, Los Angeles, CA 90010 Phone: 213-351-7336 Email: <a href="mailto:jwong@ph.lacounty.gov">jwong@ph.lacounty.gov</a>
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Janice Casil, MPP	Tobacco Control and Prevention Program, Project RENEW, Los Angeles County Department of Public Health	Address: 3530 Wilshire Blvd, Suite 800, Los Angeles, CA 90010 Phone: 213-427-4413 Email: <a href="mailto:jcasil@ph.lacounty.gov">jcasil@ph.lacounty.gov</a>
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### A.9 Explanation of Any Payment or Gift to Respondents

The amount of the proposed gifts cards are commensurate with gifts offered to participants in other comparable studies (23, 24, 26). Since the data collection strategy for MUH Operators involves more detailed information to collect through face-to-face interviews and tours of the complexes or individual apartments, the proposed gift card is higher than those that could have been provided for a phone interview or in-person interview without a visual assessment of the building or unit. The \$75 incentive for MUH Operators reflects that operators are being asked to provide more detailed information than that requested by the households (i.e., detailed cost data, copies of policies, and time to accompany Field Data Collectors on their visual assessments of the property). The additional \$50 gift card offered for households that participate in Indoor Air Quality monitoring reflects that residents are being asked to participate in instruction on how to complete a daily diary, complete that diary for seven days, and permit the installation of Indoor Air Quality monitoring equipment in the home for seven days.

LA County Data Collection Gift Cards (provided at pre-intervention and post-intervention rounds of data collection):

- \$75 gift card per MUH Operator interview (2x=maximum of \$150 per respondent); \$50.00 per household interview. (If an additional adult is needed to answer questions about the children in the home, that individual will receive a \$10.00 gift card. (2x=Maximum of \$100-\$120 per household); \$10.00 for 1 adult cotinine sample and \$10.00 for 1 child cotinine sample (2x=maximum of \$40.00 per household); and
- \$50.00 if the unit is randomly selected to participate in seven days of air quality monitoring (2x=maximum of \$100 per household).

Minnesota, Maine, and Florida: Data Collection Data only collected once (1x).

- \$75 gift card incentive per MUH Operator; and
- \$50 gift card incentive per MUH Resident focus group participant.

### A.10 Assurance of Confidentiality Provided to Respondents

- Privacy Act Determination.** This submission has been reviewed by CDC’s National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), which determined that the Privacy Act applies. The applicable System of Records Notice is 09-20-0136.
- Safeguards.** Healthy Housing Solutions, Westat, and LACDPH have adopted the security safeguards for survey data, as detailed in Table 5 below. The data collection plan of this

study has been approved by the CDC IRB (**Attachment 14**). Contractors are not subject to a non-disclosure agreement.

**Table 5. Safeguards for Security of Survey Data**

<b>Safeguards Focus</b>	<b>Principle</b>	<b>Safeguard Mechanism</b>
<b>Respondents</b>	<p>Healthy Housing Solutions, LACDPH, and Westat are firmly committed to the principle that the privacy of individual data obtained through the MUH Resident and Operator Surveys, site observation surveys, salivary cotinine samples, airborne particle monitoring, and focus groups must be protected. This principle holds whether or not any specific guarantee of privacy was given at time of interview (or self-response). When guarantees have been given, they may impose additional requirements that are to be adhered to strictly.</p>	<p>This study is also subject to the LACDPH Health Insurance Portability and Accountability Act protection. Study data will be treated in a secure manner and will not be disclosed, unless otherwise compelled by law. Specifically, the following strategies will be implemented to safeguard the privacy of study data during data collection, data storage, and data management processes.</p>
<b>Data collection</b>	<p>Data are collected in a format appropriate for the task assignment; some data are collected on paper forms in the field or the office.</p> <p>Project Managers are responsible for maintaining a written protocol for the collection and chain of custody for the data for each task of this study and for managing the data collection process.</p> <p>Project Managers are responsible for ensuring that all staff and contractors adhere to agreements specific to the study and the provisions of the U.S. Privacy Act of 1974 with regard to surveys of individuals for the Federal Government.</p>	<p>Personal identifiers to be collected by this study include respondents’ name, date of birth, address, phone number, and salivary sample. To protect privacy, Field Data Collectors engaged in collecting study data will be required to complete training on the Protection of Human Subjects prior to collecting study data. Field Data Collectors will maintain personal identifiers in a secure manner, as well as all information or opinions collected in the course of interviews, and any information about respondents learned incidentally during field work. Field Data Collectors shall exercise reasonable caution to prevent access by others to study data in their possession.</p>
<b>Data storage and management</b>	<p>Westat will keep physical copies of study data containing personal identifiers and signed consent forms in a locked container or a locked room. Reasonable caution will be exercised in limiting access to study data to only authorized individuals who are working on this study.</p> <p>Coded identification numbers will be assigned to respondents prior to creating an electronic record. Solutions’ and Westat’s Information Technology support will be responsible for determining</p>	<p>Multiple technical, physical and administrative safeguards will be used to protect the privacy of study data at Westat and after transfer to LACDPH for analysis under supervision of Dr. Mark Weber.</p> <ul style="list-style-type: none"> <li>• Data access is restricted only to authorized users on a password and firewall protected computer. Passwords are not observable or recordable, guessable, and will not be shared with others or stored in a readable format. All computers used for this study will use the most updated antivirus and antispyware protection software. No remote access software will be used on these computers. Computer monitor screens are not visible to other people. Screen savers are password protected. Data will be stored on an encrypted hard drive. Removable disks that</li> </ul>

	<p>adequate security measures in consultation with the project director to protect the privacy of personal identifiers.</p> <p>An electronic data file containing personal identifiers and linkage information will be set up and stored in a password-protected computer in a locked room. Only authorized individuals can access this linkage file.</p> <p>After Baseline and Post-Intervention LA County data have been connected, personal identifiers will be deleted from the analytical database. No more than minimal risk will be posed to the privacy of participants.</p>	<p>will be used to store data will be kept in locked drawer or cabinet. Windows file encryption system is being used.</p> <ul style="list-style-type: none"> <li>• Data are stored in guarded buildings and offices. Only authorized personnel with photo identification badges and key cards can access the data storage rooms.</li> <li>• Electronic study data are backed up at regular intervals on a secured hard drive in an offsite host-based system. Computers are maintained in secure areas, with access limited to authorized personnel. User manuals will be created to facilitate data management and analysis. All personnel who will have access to the study data will be trained and made aware of their responsibilities for protecting the data. Access to data is “role-based” and on a “need-to-know” basis. The project manager will be responsible for authorizing access privileges for each user.</li> <li>• After the project is completed and all deliverables have been provided, all data collection instruments and forms are indexed by file, boxed, and transferred to a secure location either on-site or offsite. If offsite, the location must be managed by a contractor specializing in document storage. Records will be retained at the secure location for up to seven years from the date of the last data collected, unless a different time period is specified in CDC’s contract. For some studies, a research oversight committee or Institutional Review Board may require the personal identifiers to be redacted prior to long-term storage.</li> <li>• Seven years after the anniversary date of the end of the project, the Healthy Housing Solutions’ Project Director has the discretion to dispose of the files at any time. If the files are not redacted, the documents are disposed of in a manner that assures privacy is maintained (e.g., files with personal identifiers can be shredded). After the project is complete and all deliverables have been provided and approved by the CDC, the electronic files (including personal identifiers) are retained onsite on magnetic tape or disc with the paper records in a locked filing cabinet in a secure area. A copy of the electronic file is provided to the Project Director, who must keep the second copy in a secure locked location. All electronic files on the computer network or personal computer are removed. After seven years, the Project Director has the discretion to destroy all the electronic files at any time. The electronic link between data and personal identifiers shall be destroyed within one year after the conclusion of the study. (Note: The public use dataset is a public record and will not be destroyed.)</li> </ul>
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**C. Consent.** Consent is obtained from each MUH Operator in English at the first interview and a copy of the signed consent is provided to the respondent before the interview begins. MUH Operators may read the consent or have the consent read to them, whichever they prefer (**Attachments 6A-1 and 6A-2**). Consent is obtained at the first interview in LA County from the randomly selected adult resident surveyed (**Attachments 8A-1**) and the parent or guardian for the children in the household (**Attachment 8A-3**) before the interview begins. The consents can be read by these individuals or read to them in either English or Spanish. A copy of the signed consent is provided to the respondent before the interview begins. If a child aged seven to seventeen is randomly selected to provide a saliva sample, an assent is read to the child, the child assent is obtained and a copy of the signed document is provided to the parent (**Attachment 10A-1**). Surveys are administered in English or Spanish, depending on resident preferences. Consents for adult focus group participants are obtained prior to participants' completion of the short attitudinal and demographic survey and the focus group itself (**Attachment 13A-1**). All Minnesota, Maine, and Florida surveys and focus groups are conducted in English.

The consent form to be used emphasizes the voluntary nature of participation, the intended use of the data, with whom the information can be shared, and the legal authority for data collection. Throughout the interview, residents are reminded that they do not have to respond to questions that they do not wish to answer.

Signed informed consent forms will be obtained before respondents provide any information to the Field Data Collector. Field Data Collectors will store the signed consent forms and completed MUH surveys in a locked box in the trunk of their locked car when they are conducting interviews and in a secure location in their home until data can be shipped, via Federal Express, back to Westat. During the data collection process, respondents may refuse to answer any questions, provide biological samples, or install the air monitor in their units.

**D. Nature of Participation.** Participation in this study is voluntary.

### **A.11 Justification for Sensitive Questions**

The consent form indicates that this project collects information that may be considered sensitive by a portion of respondents, e.g., smoking behavior, sex, race, age, socio-economic status, and medical conditions. The information is essential for study purposes. Although the information would not be considered highly sensitive, the study team has put adequate privacy safeguards in place.

## **A.12 Estimated Annualized Burden Hours and Cost to Respondents**

### **A.12.A Estimated Annualized Burden Hours**

OMB approval is requested for two years to provide flexibility in the information collection start and stop dates. The burden table presented below (Exhibit 1) presents annualized figures for all activities.

#### MUH Operators

On an annualized basis, the MUH Operator Survey will be administered in-person at baseline and post-intervention to 130 MUH operators in LA County and six MUH operators from Minnesota, Maine and Florida. The same survey instrument will be administered in all geographic locations (see **Attachment 6A**, Smoke-Free Multi-Unit Housing Policy Study: Operator Survey - Baseline). Content of the post-intervention survey (**Attachment 7A**, Smoke-Free Multi-Unit Housing Policy Study: Operator Survey – Post-Intervention) will be the same or closely aligned with the baseline survey, but some questions may be modified based on analysis of baseline survey results. If changes are needed, CDC will use the Change Request mechanism, prior to fielding the post-intervention survey, to request OMB approval of the modified post-intervention instrument. For each survey, the estimated burden per response is 75 minutes. This estimate includes a structured 45-minute question-and-answer period, followed by an operator-supervised facility tour in which the data collection contractor will record observational data.

MUH Operators will be recruited for participation in the MUH operator survey through telephone interviews. The estimated burden per response for each recruitment contact is five minutes. Due to differences in the selection process for MUH Operators in LA County versus those in the Minnesota, Maine and Florida study component, the recruitment scripts vary slightly for these groups (see **Attachment 4A**, Telephone Script for Recruitment of MUH Operators in LA County, and **Attachment 5A**, Telephone Script for Recruitment of MUH Operators in MN, ME, and FL). On an annualized basis, we estimate that 173 MUH operators will be screened in LA County to yield the target number of respondents.

#### MUH Residents in Los Angeles County

The MUH Resident survey will be conducted in LA County. A total of 1,000 residents will be recruited for participation in the two-year study. Each resident will complete a baseline survey (see **Attachment 8A**, Resident Survey – Baseline: Core (sections A-F)) and a post-intervention survey (see **Attachment 9A**, Resident Survey – Post-Intervention: Core (sections A-F)). On an annualized basis, this will result in the collection of 500 baseline surveys and 500 post-intervention surveys per year. We estimate that a total of 1,666 recruitment contacts must be conducted (833 per year, on an annualized basis) in order to yield the target number of qualified adult participants (see **Attachment 8A**, Resident Survey – Baseline: Screening Eligibility section, pp. 4-6). The estimated burden per response for the screening process is five minutes. For both the baseline survey and the post-intervention survey, the estimated burden per response is 45 minutes.



All 1,000 adult MUH Resident survey participants will be asked to provide baseline and post-intervention saliva swab specimens for saliva cotinine analysis (see **Attachment 10A**, Protocol for Saliva Collection). One thousand (1000) adult saliva swabs will be collected in each year of the two-year study. In the first year, the 1,000 samples will be for baseline analysis and in the second year, the 1,000 samples will be for post-intervention analysis. Participating adult residents will also provide permission for children over the age of two years to participate in the saliva specimen collection. Five hundred (500) child saliva swabs will be collected in each year of the two-year study (the 500 swabs collected in the first year will be for baseline analysis, and the 500 swabs collected in the second year will be for post-intervention analysis). The Protocol for Saliva Collection includes specific directions for obtaining saliva swabs from children in various age groups, who are expected to require varying levels of supervision and assistance with the saliva swabs. The estimated burden per response for each saliva specimen collection is 10 minutes.

Subsets of adult MUH residents will participate in additional data collection activities. A total of 500 MUH residents will provide baseline and post-intervention information about children in the household by completing the Children's Module supplement to the core MUH resident survey. On an annualized basis, we will collect 250 responses to the baseline Children's Module survey (see **Attachment 8A**) and 250 responses to the post-intervention Children's Module survey (see **Attachment 9A**). The estimated burden per response for the Children's Module is 15 minutes.

Over two years, a total of 400 adult MUH residents will provide information on residential air quality (annualized total of 200 adult MUH residents per year). Half of the residents will be from intervention sites and half of the residents will be from comparison sites. These respondents will set up the monitoring equipment and complete the Airborne Particle Monitoring Diary over a seven-day period (see **Attachment 11A**, Protocol for Air Monitoring in Multi-Unit Housing). The total estimated burden for equipment assembly, completion of the diary over a one-week period, and equipment disassembly is 90 minutes.

The MUH Resident data collections will be conducted in English or Spanish. For each instrument referenced above (as well as supplementary documents such as recruitment flyers, consent forms, and instructions), the suffix (e) identifies the English language version of the document and the suffix (s) identifies the Spanish language version of the document (i.e., see Attachment 8A(e) or Attachment 8A(s), etc.).

#### MUH Residents in Minnesota, Maine, and Florida

Information will be collected from 60 MUH residents who participate in one-time focus group discussions. The Resident Focus Group Telephone Screening Interview Script (**Attachment 12A**), will be used in the recruitment process. Each resident who chooses to participate will complete a brief, five-minute survey immediately before to the scheduled focus group discussion (see **Attachment 13A**, Resident Pre-Focus Group Demographic and Attitudinal Survey). Thirty (30) MUH residents will be asked to discuss process-oriented questions (see **Attachment 13B**, MUH Resident Focus Group Guide – Process-Oriented), and 30 different MUH residents will be asked to discuss outcome-oriented questions (see **Attachment 13C**, MUH Resident Focus Group Guide – Outcome-Oriented). Each focus group will last approximately one hour.

**Exhibit 1** summarizes the burden hours for each category of respondent for each data collection activity. The total estimated burden hours are 1,920.

**Exhibit 1. Estimated Annualized Burden to Respondents**

Type of Respondent	Form Name	Number of Respondents	Number of Responses per Respondent	Average Burden per Response (in hours)	Total Burden (in hours)
MUH Operators in Los Angeles County	Telephone Script for Recruitment of MUH Operators in LA County	173	1	5/60	14
	MUH Operator Baseline Survey	130	1	75/60	163
	MUH Operator Post-Intervention Survey	130	1	75/60	163
MUH Operators in Minnesota, Maine and Florida	Telephone Script for Recruitment of MUH Operators in MN, ME, FL	6	1	5/60	1
	MUH Operator Baseline Survey	6	1	75/60	7
	MUH Operator Post-Intervention Survey	6	1	75/60	7
Adult MUH Residents in Los Angeles County	Resident Survey – Baseline: Screening Eligibility (pp.4-6)	833	1	5/60	69
	Resident Survey – Baseline: Core (Sections A-F)	500	1	45/60	375
	Resident Survey – Baseline: Children’s Module (Section G)	250	1	15/60	63
	Resident Survey – Post Intervention: Core (Sections A-F)	500	1	45/60	375
	Resident Survey – Post Intervention: Children’s Module (Section G)	250	1	15/60	63
	Protocol for Saliva Collection (Adult)	1,000	1	10/60	167
	Airborne Particle Monitoring Diary	200	1	90/60	300
Child MUH Residents in LA County	Protocol for Saliva Collection (Child)	500	1	10/60	83
MUH Residents in Minnesota, Maine and Florida	Resident Focus Group Telephone Screening Interview Script	60	1	5/60	5
	Resident Pre-Focus Group Demographic and Attitudinal Survey	60	1	5/60	5
	MUH Resident Focus Group Guide – Process Oriented	30	1	1	30
	MUH Resident Focus Group Guide – Outcome Oriented	30	1	1	30
				Total	1,920

**A.12.B Estimated Burden Hours**

We have estimated the average hourly wage for MUH Operators using the California average hourly wage for the U.S. Department of Labor, Bureau of Labor Statistics Occupational Category (SOC code 119141): Property, Real Estate, and Community Association Managers. Because MUH residents could theoretically come from any occupational category, we have used the California average weekly wage for 2010, divided by 40 hours a week, to compute the average hourly rate for MUH Residents. The estimated cost to all respondents is \$50,098 (Exhibit 2).

**Exhibit 2. Estimated Annualized Cost to Respondents**

Type of Respondent	Form Name	Number of Respondents	Number of Responses per Respondent	Total Burden (in hours)	Average Hourly Wage	Total Cost
MUH Operators in Los Angeles County <sup>a</sup>	Telephone Script for Recruitment of MUH Operators in LA County	173	1	14	\$35.58	\$498
	MUH Operator Baseline Survey	130	1	163	\$35.58	\$5,800
	MUH Operator Post-Intervention Survey	130	1	163	\$35.58	\$5,800
MUH Operators in Minnesota, Maine and Florida <sup>b</sup>	Telephone Script for Recruitment of MUH Operators in MN, ME, FL	6	1	1	\$35.58	\$36
	MUH Operator Baseline Survey	6	1	7	\$35.58	\$249
	MUH Operator Post-Intervention Survey	6	1	7		\$249
Adult MUH Residents in Los Angeles County <sup>c</sup>	Resident Survey – Baseline: Screening Eligibility (pp.4-6)	833	1	69	\$25.28	\$1,744
	Resident Survey – Baseline: Core (Sections A-F)	500	1	375	\$25.28	\$9,480
	Resident Survey – Baseline: Children’s Module (Section G)	250	1	63	\$25.28	\$1,593
	Resident Survey – Post Intervention: Core (Sections A-F)	500	1	375	\$25.28	\$9,480
	Resident Survey – Post Intervention: Children’s Module (Section G)	250	1	63	\$25.28	\$1,593
	Protocol for Saliva Collection (Adult)	1,000	1	167	\$25.28	\$4,222
	Airborne Particle Monitoring Diary	200	1	300	\$25.28	\$7,584
Child MUH Residents in LA County	Protocol for Saliva Collection (Child)	500	1	83	N/A	0
MUH Residents in	Resident Focus Group Telephone	60	1	5	\$25.28	\$126

Minnesota, Maine, and Florida <sup>d</sup>	Screening Interview Script					
	Resident Pre-Focus Group Demographic and Attitudinal Survey	60	1	5	\$25.28	\$126
	MUH Resident Focus Group Guide – Process Oriented	30	1	30	\$25.28	759
	MUH Resident Focus Group Guide – Outcome Oriented	30	1	30	\$25.28	759
					Total	\$50,098

<sup>a</sup> Average hourly rate for California, U.S. Dept. of Labor, Bureau of Labor Statistics. Occupation: Property, Real Estate, and Community Association Managers (SOC code 119141) May 2011. Source: <http://data.bls.gov/oes/datatype.do>.

<sup>b</sup> May reflect an over-estimate of total respondent cost because 12 operators will not come from LA County.

<sup>c</sup> Represents average annual hourly wage for California, since this is where the bulk of residents will be interviewed. Average hourly wage determined from U.S Dept. of Labor, Bureau of Labor Statistics **Table 6. Private, industry by State, 2010 annual averages: Establishments, employment, and wages, change from 2009** by dividing 2010 California annual weekly wages by 40 hours. Source: <http://www.bls.gov/cew/ew10table6.pdf>.

<sup>d</sup> May reflect an over-estimate of total respondent cost because the 120 residents will not come from LA County.

### **A.13 Estimates of Other Total Annual Cost Burden to Respondents or Record Keepers**

No costs other than those described in A.12 will be incurred by the respondents to complete this data collection.

### **A.14 Annualized Cost to the Federal Government**

**Exhibit 3** presents the two types of costs to the Government that will be incurred: (1) External contracted data collection and analyses and (2) Government personnel. Total External (Contractor) project cost to the federal government for conducting this program evaluation is \$3,988,340.00. The annualized cost is \$1,994,170. These costs cover combined labor, fringe, indirect, and subcontract handling fees plus other direct costs.

**The government costs** include personnel costs for federal staff involved in project oversight and development of this Information Collection Request. These efforts involve approximately 10%

of a GS-13 public health analyst, 20% of a GS-13 scientist, and 10% of a GS-14 scientist. The total estimated annualized cost of Federal government employees is \$34,286.

The total estimated annualized cost to the Federal government is \$2,028,456.

**Exhibit 3. Estimated Annualized Federal Government Cost Distribution**

Type of Government Cost	Annualized Cost
Fully loaded labor hours by Solutions, Westat, and LACDPH staff and contractors include labor, fringe, indirect, and subcontract handling fees.	\$1,994,170
Federal Staff (per year):	
• GS-13 public health analyst at 10% FTE	\$8,242
• GS-13 scientist at 20% FTE	\$16,447
• GS-14 scientist at 5% FTE	\$4,780
• GS-14 scientist at 5% FTE	\$4,780
	<u>(Total Federal Govt.= \$34,286)</u>
<b>Total</b>	<b>\$2,028,456</b>

**A.15 Explanation for Program Changes or Adjustments**

This is a new information collection request.

**A.16 Plans for Tabulation and Publication and Project Time Schedule**

A flowchart demonstrating the cost study instrument development and data collection process is displayed as **Attachment 3C**. The comprehensive statistical analysis plan for this project is discussed in Section B and a logic model is provided in **Attachment 3D**.

**Data Analysis Planned for Los Angeles County Data**

Data related to these factors are presently limited; therefore, the findings from this study have the potential to inform and improve process and outcomes of smoke-free MUH strategies in other states and localities. Upon completion of LA County data collection, we will conduct a comprehensive statistical analysis to address the following three key research questions of this study:

1. What is the impact of a required smoke-free MUH policy on MUH residents, including both adults and children?
2. What is the social impact of a required smoke-free MUH policy on MUH adult residents and operators?
3. What is the cost of implementation associated with a required smoke-free MUH policy and are unit maintenance costs reduced after implementation of smoke-free policies?

All data will be entered into a database at Westat, checked for errors, and cleaned. SAS statistical software package, version 9.3 (SAS Institute Inc., Cary, North Carolina); SUDAAN, version 10.0.1 (RTI, Research Triangle Park, NC); and Mplus software package, version 6.11 (Muthén &

Muthén, Los Angeles, California) will be used for data analysis. Mplus will be particularly useful as it allows for the modeling of sampling design (i.e., clustering), stratification, and multilevel influences (e.g., city- MUH complex-level characteristics). The statistical significance level will be set at  $\alpha=0.05$  for a two-tailed test.

Prior to selecting appropriate statistical testing methods, the assumptions for each test will be examined. For example, for parametric tests (e.g., two sample t-test, linear regression test), the Kolmogorov-Smirnov Test will be used to determine whether the study sample came from a normally distributed population. The Levene test will be used to examine the assumption of equal variances. Data transformation (e.g., log transformation) may be used for any non-normal data. If the normal distribution assumption is still not met after data transformation, a nonparametric statistic may be used.

The comprehensive statistical analysis plan for this study includes the following:

- 1) Examine baseline characteristics of respondents to the MUH Resident and MUH Operator surveys and selected apartment complexes by intervention condition through univariate, bivariate, and stratified analyses.
- 2) Estimate the weighted prevalence, incidence, and mean or median of relevant key outcome variables by intervention condition and timing of survey through univariate, bivariate, and stratified analyses.
- 3) Evaluate the implementation of citywide smoke-free MUH policy.
- 4) Examine the independent effect of the implementation of a citywide smoke-free MUH policy on key outcome variables through multilevel multivariate regression models.

Table 6 provides information planned statistical analysis and covariates; Part B.A.1 provides detail on the analysis methodology.

**Table 6. Planned statistical models and potential confounders**

Key Research Questions	Key Outcome Variables	Statistical Models	Confounders/Other Covariates		
			City-Level	Facility-Level	Individual-Level
1. What is the impact of required smoke-free MUH policy on MUH residents?	a. Salivary cotinine concentration	Multilevel multivariable logistic regression models	Population density, median household income, race/ethnicity, current smoke-free policies, percent of renter-occupied housing	Voluntary smoke-free policy, facility characteristics (built, type, size), air/ventilation in the unit, level of smoking policy enforcement	Age, gender, race/ethnicity, SES (e.g., household income, education), SHS exposure from other sources, smoking behavior, whether taking measures to prevent SHS from coming into the apartment unit, and history of asthma and other respiratory health outcomes among both children and adults.
	b. Fine SHS particles(PM <sub>2.5</sub> ) concentration	Multilevel multivariable linear regression models	Population density, median household income, race/ethnicity, current smoke-free policies, percent of renter-occupied housing	Voluntary smoke-free policy, facility characteristics (built, type, size), air/ventilation in the unit, level of smoking policy enforcement	Age, gender, race/ethnicity, SES (e.g., household income, education), other particle sources (e.g. cooking, gas, exposure to vehicle exhaust), and history of asthma and other respiratory health outcomes among both children and adults.
	c. Cigarette consumption among adult respondents	Multilevel multivariable linear regression models	Population density, median household income, race/ethnicity, current smoke-free policies, percent of renter-occupied housing	Voluntary smoke-free policy, level of smoking policy enforcement	Age, gender, race/ethnicity, SES (e.g., household income, education), beliefs about SHS and smoking policy, and history of asthma and other respiratory health outcomes among both children and adults.



Key Research Questions	Key Outcome Variables	Statistical Models	Confounders/Other Covariates		
			City-Level	Facility-Level	Individual-Level
	d. Quitting intention / attempt among adult respondents	Multilevel multivariable logistic regression models	Population density, median household income, race/ethnicity, current smoke-free policies, percent of renter-occupied housing	Voluntary smoke-free policy, level of smoking policy enforcement	Age, gender, race/ethnicity, SES (e.g., household income, education), beliefs about SHS and smoking policy, and history of asthma and other respiratory health outcomes among both children and adults.
2. What is the social impact of required smoke-free MUH policy on MUH residents and operators?	a. Residents' knowledge, attitudes, and beliefs regarding SHS exposure	Multilevel multivariable logistic regression models	Median household income, race/ethnicity, current smoke-free policies, percent of renter-occupied housing	Voluntary smoke-free policy, level of smoking policy enforcement	Age, gender, race/ethnicity, SES (e.g., household income, education),
	b. Residents' self-reported barriers to compliance and factors that support their involvement in MUH policy adoption, implementation and enforcement	Multilevel multivariable logistic regression models	Median household income, race/ethnicity, current smoke-free policies, percent of renter-occupied housing	Facility size and type	Resident's age, gender, race/ethnicity, education, smoking status
	c. Operators' self-reported barriers and factors that promote their of adoption, implementation and enforcement MUH policy	Multilevel multivariable logistic regression models	Median household income, race/ethnicity, current smoke-free policies, percent of renter-occupied housing	Facility size and type	Operator's age, gender, race/ethnicity, education, smoking status
	d. Operators' knowledge, attitudes, and	Multilevel multivariable logistic	Median household income, race/ethnicity, current smoke-free	Facility size and type	Operator's age, gender, race/ethnicity, education, smoking status

Key Research Questions	Key Outcome Variables	Statistical Models	Confounders/Other Covariates		
			City-Level	Facility-Level	Individual-Level
	beliefs about smoke-free MUH policies	regression models	policies, percent of renter-occupied housing		
3. What is the cost of required MUH smoke-free policies?	a. Smoking-related operation cost saving	Uni-, bivariate, and multivariate logistical regression models	Median household income, race/ethnicity, percent of renter-occupied housing	Facility size, built and type, monthly rent, voluntary smoke-free policy, level of smoking policy enforcement	
	b. Smoking-related unit turn-over cost saving	Uni-, bivariate, and multivariate logistical regression models	Median household income, race/ethnicity, percent of renter-occupied housing	Facility size, built and type, monthly rent, voluntary smoke-free policy, level of smoking policy enforcement	

### **Data Analysis Planned for Minnesota, Maine, and Florida Data**

The number of MUH Operators completing the interview is not large enough to conduct detailed statistical analyses; however, these interviews will provide basic information on the policy context in each regional location and may clarify individual participants' experiences and responses.

Separate topic guides have been developed for focus groups; there are common questions across the two guides as well as questions that are unique to each. The Process-Oriented MUH Resident Focus Group Guide is provided as **Attachment 13B** and the Outcome-Oriented MUH Resident Focus Group Guide is provided as **Attachment 13C**.). Both groups will obtain general opinions of residential smoke-free policies. Focus groups will be tape-recorded and transcribed with individual participants labeled by ID number. Transcripts and some quantitative variables will be uploaded into NVivo qualitative data analysis software for review and analysis.

Quantitative data from the pre-focus group questionnaires include demographic, health, and community characteristic items (**Attachment 13A**). Quantitative data will be stored and analyzed in an Excel database.

Secondary data collection will include document review from newspapers, policy and legislative records, and conversations with key informants in each regional location. Information from these sources will be used as background for developing policy models and understanding the context for primary data. Contextual data from secondary sources will be especially useful to identify larger systemic barriers that MUH Operators and focus group participants were or were not able to overcome as they developed and implemented policies to protect residents from the ill effects of exposure to SHS in their housing units.

Review and analysis of the focus group transcripts will be guided by the principles of framework analysis. First, two trained coders from the study team will read all focus group transcripts to familiarize themselves with the data and identify preliminary themes. A priori themes will be used as umbrella categories to develop subthemes relating to barriers, examples of ways to overcome barriers, and strategies for adoption or implementation. During the next phase of qualitative data analysis, coders will run crosstabs in NVivo using the organization criteria above to create comparison groups. Intergroup differences will be summarized and documented in a summary using descriptive measures such as frequencies. Quantitative data from the pre-focus group questionnaires and MUH operator interviews will be used to provide context for results from qualitative analyses.

#### **A.16.1 Publication Plan**

This study will generate three manuscripts for submission to peer review journals. The manuscripts will address the results from all populations studied. In addition, we have identified the following strategies to disseminate the study findings and ensure that they will be widely reviewed and correctly interpreted:

1. Engage key stakeholders at the initial stage of the project and incorporate their needs and input into the study planning;
2. Prepare key stakeholders to use the study findings by discussing how potential results and study outcomes might affect their decision-making, exploring positive and negative

- implications of potential data, and identifying different options for program improvement;
3. Tailor interim and final reports and recommendations to meet the needs of different key stakeholders;
  4. Conduct follow-up dialogue with key stakeholders and provide training and technical assistance to ensure that the study findings are properly used, recommendations are correctly understood, and lessons learned are addressed in future public health practice; and,
  5. Share study findings and lessons learned with key stakeholders in multiple formats.

**A.16.2 Project Timeline**

The expected time schedule for project activities is presented in *Exhibit 4*.

**Exhibit 4. Estimated Time Schedule for Project Activities**

<b>Activity</b>	<b>Expected Timeline</b>
Data Collection Activity 1 – Pilot	Completed October 31, 2011
Recruitment of MUH Operators – LA County	Planned for February – July 2014
Recruitment of MUH Residents – LA County	Planned for March – July 2014
Recruitment of MUH Operators – MN, ME, & FL	Planned for March – July 2014
Recruitment of MUH residents for focus groups –MN, ME, & FL	Planned for March – July 2014
Completion of Baseline: LA MUH Operator Surveys	September 2014
Completion of (Baseline: LA MUH Resident Surveys	September 2014
Completion of MN, ME, FL MUH Operator surveys	September 2014
Completion of MN, ME, FL MUH Resident Focus Groups	September 2014
Validation of MN, ME, FL MUH operator and focus group data	November 2014
Analysis of MN, ME, FL MUH operator and focus group data	December 2014 – February 2015
Completion of Post-Intervention: LA MUH Operator Surveys	Planned for July 2015
Completion of Post-Intervention: LA MUH Resident Surveys	Planned for July 2015
Validation of LA survey data	Planned for August - October 2015
Analysis of LA survey data	November 2015 – April 2016
Draft manuscripts: 1) case study of MN, ME, and FL policy development and implications: 2) analysis of pre/post quasi-experimental design data for Los	1) May 2015; 2) June 2016

Angeles	
Collection of secondary sources of cost data for LA to compare to LA MUH Operator and Resident Data additional analyses of costs of implementation	February 2015
Draft manuscript – cost analysis for Los Angeles	June 2016

**A.17 Reason(s) Display of OMB Expiration Date is Inappropriate**

No request for an exemption from displaying the expiration date for OMB approval is being sought.

**A.18 Exceptions to Certification for Paperwork Reduction Act Submissions**

No exceptions to the certification are requested.

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