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Small Wind Turbines in the Built Environment
Decommissioning Guide
Berkeley, CA, USA
1 June 2013

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Kimberly L. King
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June 2013

contents

list of figures & tables

list of figures

list of tables

introduction

Small Wind Turbines in the Built Environment Decommissioning Guideline

The aim of this framework document is that it can serve as guidance, as far as it is practical, to those seeking to navigate and obtain approval for decommissioning wind turbines in the built environment or in urban settings.

the problem

Although historically there are not many examples of small wind turbines installed in the built or urban environment in the USA, small wind turbines that are inactive or not generating electricity i.e. freewheeling, are not good advertisement for the wind energy industry. Just like large, utility scale wind turbines, a small wind turbine requires regular attention and maintenance until it reaches the end of its useful life, and requires a plan for decommissioning or repowering. A decommissioning plan identifies the methodology used to mitigate potential impacts resulting from end of usefulness of a small wind turbine in the urban or built environment.

During the planning stages, wind turbine developers rarely seek bids for the cost to decommission a project. What is typically assumed is that the salvage value of the turbine(s) will cover the decommissioning expenses instead of ensuring decommissioning funds are allocated at a project start. In a great deal of these cases, the cost of decommissioning is often underestimated.[1] And in the case where a wind resource is favorable, many projects are not decommissioned, but instead re-powered—especially now that wind turbine technology has improved and several 20 year old machines can be replaced with a single, more efficient wind turbine. This latter approach may not, however, be pragmatic for a residential wind turbine in the built/urban environment.

[1] Unused Wind Farm Raises Decommissioning Issues, Pacific Business News web site. [Online] [Cited: May 26, 2013] http://www.bizjournals.com/pacific/print-edition/2011/04/29/unused-wind-farm-raises.html

02

Basic questions arise when it comes considering the cost to decommission deteriorating or outdated wind turbines after 20 or 30 years.

Basic questions arise when it comes considering the cost to decommission deteriorating or outdated wind turbines after 20 or 30 years. Questions that may arise include:

- Who will be responsible for decommissioning the wind turbine(s)? The developer? The owner? The operator? The city? The municipality? The state?
- How long with the responsible party have to decommission the wind turbine(s) after its useful life has ended? 60 days? 6 months? A year? Longer?
- Where will the money come from to perform the decommissioning?
- How much will the decommissioning cost and who will be responsible for paying for this?
  - This cost should include services of a licensed, professional engineer to estimate the total decommissioning costs.
  - It should be understood, the salvage value of recovered materials may not necessarily offset the total decommissioning costs.[2]

decommissioning defined

Decommissioning is the process of terminating operation and complete removal of a wind energy turbine and all related structures, foundations and equipment. A decommissioning plan identifies removal components, costs associated with components removal and scrap value. Equipment removal includes above ground components, including the wind turbine, electrical collection lines, inverter (phasor), as well as underground components, including the turbine foundation and collection system cables. And, decommissioning plans may vary according to the circumstances.

Decommissioning costs for wind turbines depend a great deal on permit requirements, the wind turbine characteristics and site-specific issues i.e. how

[2] Unused Wind Farm Raises Decommissioning Issues, Pacific Business News web site. [Online] [Cited: May 26, 2013] http://www.bizjournals.com/pacific/print-edition/2011/04/29/unused-wind-farm-raises.html

deep are the foundations poured, how close is the wind turbine to other structures in the built environment.

intended audience: who should use this guideline?

In the interest of promoting sound decommissioning practices for small wind turbines in the built environment, this material is designed for those seeking relevant requirements; this includes:

- Small wind turbine installers
- Engineers i.e. renewable energy engineers, mechanical engineers, structural engineers, electrical engineers
- City or Municipality Zoning, Building and Planning personnel
- Property owners
- Developers

This guidance is not specifically geared toward those wanting engineering how-to or comprehensive procedures. Close interaction among engineers, small wind installers, city or municipality personnel, developers and property owners at the outset of a project will help create a feasible plan that is sound and attainable.

prior knowledge needed to understand the plan guidelines

A basic understanding of small wind turbine technology is advised. The intended purpose for the wind turbine decommissioning needs to be well defined, and basic understanding of wind energy systems can further

03

A basic understanding of small wind turbine technology is advised.

streamline the decommissioning process.
This document also attempts to reconcile City of Berkeley, CA, USA requirements referenced by their demolition process, where applicable, for the decommissioning of a small wind turbine. [See ”case study” on page 24.]

executive summary

Small Wind Turbines in the Built Environment Decommissioning Guideline

Best practices decommissioning documents exist for rural, utility scale wind developers. However, documentation does not exist for decommissioning small wind turbines in a densely populated urban, built environments—environments which presents more technical complexity. Like utility scale wind turbines, smaller wind turbines deployed in the built environment are typically designed to operate for 20 years. When the anticipated end of life of a small wind turbine approaches or the cessation of operation occurs, a decommissioning plan needs to be implemented.

The aim of this document is to provide an initial set of guidelines and recommendations for a practical course of action. This guideline can be used by owners, developers or municipalities to ensure future decommissioning of aging small, residential wind turbines in the built environment is conducted consistently against a well-founded set of standards as they come to fruition.

Provisions for decommissioning wind turbines in the built environment should be included in policy and regulatory frameworks. It should be understood the guidelines set forth in this document may differ from relevant and already

05

Provisions for decommissioning wind turbines in the built environment should be included in policy and regulatory frameworks.

established legislation, ordinances or guidelines. It is recommended that future ordinances include the following matters are covered in a decommissioning program:

- Measures to be taken for decommissioning the small wind turbine system, or any part or apparatus thereof, including details about the wind turbine, equipment and personnel deployed to complete the decommissioning.
- Estimate of the expenditures likely to be incurred in carrying out these measures.
- The greatest value of the removed wind turbine would be realized by selling the wind turbines for reuse under the assumption that after installation, the turbines would lose 50% of their value in year 1 and then 5% every year thereafter (conservative estimates).[1]
- Provisions for determining the time frame within which these measures need to be taken.
- Provisions for restoring the site to pre-installation conditions.
- When necessary, provisions for monitoring and maintenance for the site post-decommissioning to ensure the requirements have been met.
- And as much as possible, language should be included that the
- responsibility and cost of dismantling a wind turbine after use should reside with the owner/developer.

Some practices addressed in this document include permitting practices, environmental impact considerations and public health and safety considerations.

[1] Best Practices in Implementation of Wind-Diesel Systems. Alaska Center for Energy and Power (ACEP) [Online] [Cited: May 26, 2013] http://www.uaf.edu/acep/alaska-wind-diesel-applic/wind-diesel-best-practice-1/bpguide.pdf

background information

Small Wind Turbines in the Built Environment Decommissioning Guideline

When making determinations, related apparatus used for providing electricity e.g. structures, electrical apparatus, lines or cables should be included in an application for a permit or license for the decommissioning of a small wind turbine in the built environment. The determination should also include electric cable protection measures and site restoration. Arrangements for decommissioning, that are without additional expense to a municipality, or local city government needs to additionally be included. Conditions for additional requirements may be needed before a permit or license is approved.

A standard condition of a permit or license in a decommissioning to be carried out in accordance with an agreed decommissioning plan can include the following:

- Measures to be taken for decommissioning a small wind turbine, or any part thereof, and any related apparatus.
- Expenditure estimates likely to be incurred in carrying out these measures.
- Provisions for determination of the times at which, or periods within which, the measures will need to be taken.
- Where the plan proposes that the wind turbine or any part, or apparatus will be moved, a provision to restore the site to the pre-installation condition prior to construction.
- If any parts of the installation or apparatus need to be left in position, necessary provisions need to be made to continue monitoring and maintenance.
- After the decommissioning is completed, if applicable, monitoring of the site may be required to ensure all the requirements have been met.

07

description

of proposed decommissioning measures

The proposed decommissioning measures covered in this section include the following:

- Description of Work Required
- Environmental Impact Assessment (EIA) & Environmental Statement (ES) [See page 09]
- Health & Safety Plan [See page 10]
- Salvage and Decommission Costs [See page 16]
- Retrofitting and Repowering Considerations

description of work required

Evaluating and categorizing all components and materials for post project use includes:

- Removal of above ground structures i.e. turbine, tower, transformers, cabling
- Removal of below-ground structures i.e. turbine infrastructure foundations
- Site restoration e.g. topsoil or other requested restoration measures
- Re-vegetation, reseeding
- Implementation of a monitoring and remediation period, if requested

The contractor/developer should remove the turbine and return the site to as close as practical to state prior to the wind turbine use. Site restoration entails re-vegetation with indigenous plants. Site clearance needs to be addressed in planning agreements. At times, turbine foundations may be left in-situ because digging them up could cause greater environmental or infrastructure damage.

retrofitting & repowering considerations

As small wind turbine technologies advance, there may be circumstances when a retrofit or repowering may be more economically prudent. As long as it is cost-effective, portions of the existing project e.g. turbine, tower, electrical infrastructure can be retrofitted and the wind turbine repowered.

As is the case for utility scale wind turbines, with advances in technology, repowering an older, less efficient small wind turbine with new replacement parts i.e. generator, blades and possibility the entire turbine also makes sense. This may be more economically feasible option as a small wind turbine approaches the anticipated end of life.

A repowering process may require planning permission that includes siting and permitting procedure adherence e.g. addressing environmental impact issues.

...with the advances in technology, repowering an older, less efficient small wind turbine with new replacement parts...also makes sense.

eia & es

(environmental impact assessment & environmental statement)

Small Wind Turbines in the Built Environment Decommissioning Guideline

Typically, an Environmental Impact Assessment (EIA) is conducted at the pre-installation stage and pre-decommissioning stage. The EIA investigates the possible positive or negative impacts that a proposed project may have on the environment, consisting of the environmental, social and economic aspects. The EIA ensures that decision makers consider the ensuing environmental impacts when deciding whether or not to proceed with a project.[1]

Most jurisdictions require as part of a formal consent process that the applicant for a permit or license to operate, deploy, use or decommission a renewable energy system must provide an Environmental Statement (ES). This statement should include a description of the measures proposed to avoid, mitigate, reduce and remedy likely significant adverse effects of the wind turbine installation.

In the case study in this guideline, an asbestos survey was required by the City of Berkeley as a necessary constituent of the demolition/decommissioning application process.

[1] Environmental Impact Assessment. Wikipedia, the free encyclopedia. [Online] [Cited: May 27, 2013] https://en.wikipedia.org/wiki/Environmental_impact_assessment

health & safety plan

Small Wind Turbines in the Built Environment Decommissioning Guideline

An appropriate health and safety plan may also be expected, so that any persons involved in a wind turbine decommissioning are also in compliance with applicable Occupational Health and Safety Administration (OSHA) requirements.

This document does not cover what the general health and safety obligations of employers for this type of work, and how they apply to persons at work in connection with renewable energy activities carried on under the respective location as applied to OSHA compliance. It is surmised that potential impacts to worker and public health and safety during the decommissioning of a wind energy decommissioning would be similar to those from any construction-type project that includes earth-moving, crushing, large equipment and transportation of overweight and oversized structures. Other health and safety issues should include working at heights, working in potential weather extremes and possible contact with natural hazards e.g. uneven terrain, dangerous plants, animals or insects.

consultation

with interested parties & stakeholders

Small Wind Turbines in the Built Environment Decommissioning Guideline

Taking a proactive community consultation stance toward establishing effective and appropriate approaches is recommended. One may encounter challenges to long-held community values that involve aesthetic and quality of life factors. Recognizing concerns and including participatory and consultative mechanisms can facilitate community support when the actual decommissioning date arrives. Stakeholder consultation guidelines highlighting needs include:

- Identifying all the relevant stakeholders.
- Providing these stakeholders with information they need.
- Conducting transparent, open and honest communications on what the decommissioning process involves.
- Engage stakeholders, enabling all to have opinions heard and respected.

Other than the property owner, stakeholders may include community neighbors, construction contractor, equipment suppliers, strategic and statutory authorities including electric utility representatives, local and municipality officials. Community stakeholders are typically individuals or organizations residing in the community and may be affected by the decommissioning activities.

At a future date, statutory stakeholders will likely be pre-defined by regulations/ ordinances which developers will be obligated to consult. These stakeholders will possibly be comprised of state and federal agencies, local authorities, electric utilities, network service providers and regulators, and perhaps even the public e.g. organizations whose opposition would be significant, such as a historical society.

12

Taking a proactive community consultation stance toward establishing effective and appropriate approaches is recommended.

Potential economic, social and environmental effects associated with the decommissioning by the owner or responsible agent also requires consideration. The decommissioning could affect other users in the area e.g. access hampered by encroachment of heavy-duty equipment or environmental sensitivity changes (visual, noise, traffic, plant or wildlife habitat). A project-specific website can be utilized to provide up to date information for interested parties.

decommissioning process

Small Wind Turbines in the Built Environment Decommissioning Guideline

Typically, the owner/proprietor will initiate action if the turbine has not been generating electricity for a specified time-period, triggering the decommissioning project. Essentially, this process will involve ceasing all activity and disposing of all the equipment. All the decommissioning and restoration activities need to adhere to the requirements of respective governing authorities and in accordance with all applicable state, municipal and local permits.

It is an important consideration for the developer to make provisions and plans for decommissioning of the wind turbine before it is erected. As a part of this plan, a methodology can be identified and used to mitigate potential impacts resulting from the end of operation of the wind turbine at the end of its useful life. The decommissioning plan identifies the specific project components for the removal, the costs associated with components removal and the associated scrap value.

The decommissioning plan leading to the submission of a permit can be split into distinctive stages (See “table 1: decommissioning plan steps” on page 15):

- Consenting Process
- Review
- Decommissioning
- Retrofitting and Repowering

decommissioning the wind turbine

Decommissioning the wind turbine includes removal of the turbine, tower, cabling, infrastructure, and foundation to below grade and site restoration. The turbine should be dismantled in reverse of the erection sequence with the aid of a crane. The work sequence will likely adhere to the following decommissioning plan steps:

- Assemble and stage crane on pad near the turbine
- Install erosion control measures, if required
- Disconnect electrical connections
- Remove all above-ground structures

Turbine

- Remove rotor and generator block to the ground
- Disassemble the rotor

Tower

- Remove turbine tower sections and disassemble on the ground

Inverter

- Disable/Cap-off all connections
- Remove apparatus

Cabling

- Remove electrical down tower assembly
- Remove electrical collector system

Foundation

- Remove wind turbine foundation
- Backfill foundation
- Rehabilitate disturbed areas (re-vegetation, suitable grading, seeding, etc.)

Miscellaneous

- Haul turbine components off-site

The turbine should be dismantled in reverse of the erection sequence...

DECOMMISSIONING PLAN STEPS

STAGE	
CONSENTING PROCESS	
1	Preliminary permits applications discussions with stakeholders.
2	Detailed permitting discussions and draft of program provided including proposed financial security measures.
3	Initial consultation with interested parties and assessments conducted.
4	Formal submission of permits with program application.
REVIEW	
5	Reviews and modifications of decommissioning program. Determination to issue permits and conditions to be attached relating to decommissioning.
DECOMMISSIONING	
6	Final program is approved by authority under relevant permit/license conditions.
7	Owner/Developer/Responsible party undertakes decommissioning program.
8	Owner/Developer/Responsible party submits a report detailing how the program was carried out, including post-site decommissioning monitoring conditions.
RETROFITTING AND REPOWERING	

table 1: decommissioning plan steps

The decommissioning plan leading to the submission of a permit can be split into distinctive stages.

costs & financial security

Small Wind Turbines in the Built Environment Decommissioning Guideline

Decommissioning expenses are the responsibility of the owner(s) or operator(s). An estimate of the costs likely to be incurred in carrying out the decommissioning program measures is required. Funds should be set aside to ensure enough money is available to pay for the decommissioning. Professional advice should be taken to ensure the validity of the projected estimate. It is quite possible, depending on the outcome of the professional advice, a higher amount may be required.

A suggestion for suitable financial provisions could include evidence that a financial assurance is in place to ensure the permit or license holder can successfully undertake the decommissioning program, and meet any other requirements that may be imposed in relation to the decommissioning. This way, to the extent of funds available, the financial assurance can be use to off-set the costs of the decommissioning, so the municipality or city does not have to incur any of these costs. It is usually assumed that the salvage value of the wind turbine and related equipment is considered as part of the decommissioning formula. These costs should be adjusted for inflation.

Suggestions for financial security might include:

- Performance bond
- Surety bond
- Letter of credit
- Other acceptable form of financial assurance [1]

Existing tower technology yields approximately 90% and salvageable materials i.e. steel by weight for recycling. Wind turbine towers, hubs, blades and generators are modular, allowing for ease in removal, reconditioning and reinstallation.[2]

[1] Bowers Wind Project MDEP NRPA/Site Location of Development Combined Application SECTION 29: DECOMMISSIONING, Section_29_Decommissioning.pdf

[2] Best Practices in Implementation of Wind-Diesel Systems. Alaska Center for Energy and Power (ACEP) [Online] [Cited: May 26, 2013] http://www.uaf.edu/acep/alaska-wind-diesel-applic/wind-diesel-best-practice-1/bpguide.pdf

17

...depending on the outcome of the professional advice, a higher amount may be required.

decommissioning schedule considerations

Small Wind Turbines in the Built Environment Decommissioning Guideline

Provisions seeking a timely decommissioning might include that this procedure be carried out as soon as reasonably practical. It is reasonable to expect that the removal, repowering or other re-use of the wind turbine installation is not delayed, unless a robust case demonstrating re-use opportunities, or justifiable reasons for deferring the decommissioning are presented. Understandably, deferrals or other modifications from an agreed program would require approval from the applicable permitting or licensing agencies.

A wind turbine is presumed to be at the end of its useful life if no electricity is generated for a continuous period of twelve (12) months.[1]

[1] AWEA State Wind Ordinances. [Online] [Cited: 29 May 2013] http://www.awea.org/learnabout/smallwind/upload/Wind-Ordinances-by-State-OH.pdf

It is up to the provisioning agency to establish what constitutes a reasonable time line for a decommissioning. The provisioning agency also needs to provide the wind turbine's owner with this information e.g. owner(s) or operator(s) shall complete decommissioning within, for example, sixty (60) days after the end of the wind turbine's useful life when all applicable permitting paperwork has been received and approved.

If there is a good cause requiring an extension, the Zoning Administrator may grant a reasonable extension of time to complete decommissioning. If the wind turbine's owner(s) or operator(s) fails to complete decommissioning within the prescribed time-period, the Zoning Administrator may designate a contractor to complete decommissioning with the expense thereof to be charged to the violator, or to become a lien against the premises.

If the wind turbine is not owned by the property owner(s), it may be recommended that a bond must be provided to the provisioning agency by the turbine operator(s) for the cost of decommissioning the wind turbine.[1]

A wind turbine is presumed to be at the end of its useful life if no electricity is generated for a continuous period of twelve (12) months.

[1] Codified Ordinances of Gibsonburg, OH, Part 13 - Building Codes, Chapter 1333 Small Wind Turbines [Online] [Cited: May 29, 2013] http://www.conwaygreene.com/WHDrane/lpext.dll/Gibsonburg/30ed/31f0?f=templates&fn=document-frame.htm&2.0#JD_133309

project management & verification

Small Wind Turbines in the Built Environment Decommissioning Guideline

In the interest of a developer, a review of the decommissioning plan may be required at regular intervals. Proposals may require modifications, and new information gathered due to changes in market conditions, etc. Depending on the conditions relating to the decommissioning, professional advice may be sought on proposal changes and license modifications required.

Upon completion of the decommissioning, the person(s) submitting the plan will be required to satisfy the respective authority that the approved plan has been successfully implemented. A detailed report on how the plan was carried out should be submitted within a reasonable time frame e.g. two months after completion of the decommissioning.

21

A detailed report on how the plan was carried out should be submitted within a reasonable time frame...

As a best practice recommendation, this report should include:

- Confirmation the decommissioning has been carried out in accordance with the approved decommissioning plan, including an explanation of any major variances.
- Decommissioning information on the outcomes, including site restoration to pre-installation status.
- Confirmation that all appropriate bodies have been notified about the removal, and if any installation parts still remain.
- Information about the actual decommissioning costs and an explanation of any major variances from the forecasted costs.
- Provisions for post-decommissioning on-going monitoring reports, if required.

site clearance & restoration

Small Wind Turbines in the Built Environment Decommissioning Guideline

Site clearance and restoration should be addressed in the accompanying planning permission and agreements. In general, all visible traces of the wind turbine installation are removed. This includes removal of the wind turbine, tower and electrical components.

In the event that digging up the turbine foundation would cause greater environmental damage, it can be left in-situ. If the foundation is removed, a minimum depth below grade needs to be established for restoring, stabilizing, grading and clearing of the land surface areas affected.

Post-project evaluation and use of the dismantled wind turbine components involves categorizing parts for reconditioning, reuse, salvage, recycle, disposal and possibly research.

post decommissioning

monitoring, maintenance & site management

Small Wind Turbines in the Built Environment Decommissioning Guideline

Utility scale wind farms require implementation of a two-year monitoring and remediation period to ensure all the requirements of the decommissioning have been met. Depending on the respective municipality or statutory agencies, monitoring and maintenance of the site may or may not be required for a residential wind turbine in the built environment, and can be left under the auspice of the owner to manage.

case study

aero power sl1500
berkeley, ca, usa [1981/82]

Small Wind Turbines in the Built Environment Decommissioning Guideline

introduction

Generating renewable energy closer to where it will be used just makes sense, and creates an opportunity for the public sector to not only respond to climate instability, but to also improve their finances. Vanguards started installing utility scale wind turbines in the Altamont Pass in the San Francisco Bay Area in 1981. During this time, there were incentives for other emerging renewables, like small wind turbines, that could also be installed by the general public. No doubt there were challenges and risks, but also the opportunity for many rewards.

However, when a small wind turbine is poorly sited, the results can be worthless—and worse—it can become a safety hazard for the community. Wind turbines, be they utility scale or smaller, commercial or residential, are designed to last over 20 years. During their lifespan, a proactive maintenance regime can extend the operational lifespan of utility scale or smaller commercial and residential wind turbine generators to a 30 year operational life span.

the aero power systems sl1500 wind turbine specifications

Make, Model, Year	Aero Power Systems SL 1500 (1979)
Designer	Mario Agnello
Year Installed	1982
Type	Horizontal Axis Wind Turbine (HAWT)
Mast	Custom built 60' Solargy Tower Monotube (four telescoping sections fabricated with boiler steel ANSI reference unknown)
Orientation	Upwind
Blades	3 (wood)
Rotor Diameter	12 ft (3.66 m)
Weight	160 lbs (72.6 kg)
Rated Power	1.43 kW
Rated Power (max)	1.5 kW
Rated Wind Speed	23.9 mph - 25 mph (10.7 m/s)
Cut-in Speed	6 mph - 8 mph (3.6 m/s)
Cut-out Speed	101 mph (45 m/s)
Date Installed	December 1981
Date Commissioned	January 1982
Cost (circa 1980)	$3,000.00
Total Installation Cost	$12,000.00 (City of Berkeley estimate)
Total Charges	$17,000.00 (Amount actually paid)
Contact/Current Owner	Myra Wysinger
Location	3228 Idaho St., Berkeley, CA 94702, USA

table 2: aero power sl1500 specifications

...when a small wind turbine is poorly sited, the results can be worthless—and worse—it can be come a safety hazard for the community...

26

Decommissioning a small wind turbine in the built environment is not an everyday occurrence...

historical summary

This Aero Power Systems SL1500 wind turbine generator (WTG) was installed in late 1981 in Berkeley, CA, USA. In spite of never having any maintenance, and although it was learned from the homeowner that it has been freewheeling, not generating any electricity for approximately ten years, this machine has not experienced a catastrophic mechanical failure event in over 30 years. To the best of the knowledge of the current homeowner, the reason it has been freewheeling is due to the fact that someone accidentally severed the brake cable.

Decommissioning a small wind turbine in the built environment is not an everyday occurrence. And, this particular location certainly would not be allowed by today's standards for a small wind turbine in the built environment e.g. one acre of real estate is typically required. This wind turbine was installed in residential neighborhood with a medium height and density roughness profile, between semi-detached houses of mixed height. The base of the mast of this wind turbine is situated in very close proximity to electrical power lines and housing structures, making this decommissioning very challenging and involved.

A Public Records Act (PRA) Request was filed in March 2012 with the City of Berkeley Planning and Development Office for printed historical records on this wind turbine; nothing was available in the archives for retrieval. The only information about this wind turbine installation was obtained via interviews with the surviving Wysinger family members and from the scant 1982 City of Berkeley Zoning archives. The California Energy Commission (CEC), which approved an incentive payout, had a policy to dispose of documentation after four years. The CEC agent suggested contact be made with Pacific Gas and Electric (PG&E) and the California Public Utilities Commission (CPUC). Efforts were made to contact these agencies, and additionally did not net any information.

All technical information cited about this wind turbine installation is extricated from a March 1982

Berkeley Gazette article and from a digitized 8 mm film located in the family garage:

- ▹ "Family sets up city's first residential windmill" *Berkeley Gazette* article
- ▹ YouTube 8 mm film of 1981/82 installation

In the 25 March 1982 *Berkeley Gazette* article, the developer over-sold the wind turbine performance by stating the wind turbine:

- ► would generate 400 kW/month.
- ► would cover 90% of the family's Pacific Gas and Electric (PG&E) electricity bill.
- ► would be afforded a State of California 55% tax credit incentive from the California Energy Commission (CEC).
- ► would be entitled to have PG&E purchase excess power generated at $0.072/kWh over ten years.
- ► had a 125 mph cut out speed.
- ► would receive entitlements from PG&E, which included a purchase of excess power generated at $0.072/kWh over a 10 year period.

After just three months, the Wysinger family realized the wind turbine would not generate the amount of electricity the developer had promised. It was also learned that work was not completed on this installation, and legal recourse was pursued. So the family decided to decommission the wind turbine. However, they just did not have the financial means to do that—especially after the $12,000 they had dropped on the installation several months prior.

In early 2012, an independent consultant offered services to voluntarily perform discovery about where the decommissioning challenges lay. It turned

The due diligence process revealed a great deal of involvement... the dominant reason why past attempts by many others had fallen short, were never started and never completed.

out decommissioning a small wind turbine in the City of Berkeley had not been encountered in the past. Additionally it was learned that this type of a demolition was not of the familiar of any personnel in the City of Berkeley City Manager's Office, Building and Planning Department, Zoning and Occupational Health and Safety departments.

The plan and work required during the due diligence process revealed a great deal of involvement, which invariably was the dominant reason why past attempts by many others had fallen short, were never started and never completed. An additional note of consequence is the installation was left in a state of disrepair and unsafe for an untold number of years, never receiving any O&M (operations and maintenance). The state of the electrical infrastructure was also left in a dubious state. Additionally, there was a known fatal design flaw in the governor of this particular wind turbine, where it was unable to hold the blades if the pivot wore. [1]

In early March 2013, a industrial engineering firm was consulted to perform an asbestos survey as per the City of Berkeley demolition application process. And, a qualified California License C10 Electrician was hired. The electrician ensured wires from the wind turbine were capped off, the hot connection in the respective mains was capped off, and the connections from the AC connections to the phasor-inverter were capped off. The wind turbine is now safe-off for anyone needing to climb up the mast without being concerned about the flow of electrons from the wind turbine, or from the PG&E electrical distribution network.

It was also revealed, there was an 'other structures' clause in the homeowner's insurance policy for coverage in the amount of $73,000. However, the homeowner was reluctant to pursue soliciting feedback from her insurance agent to see if this wind turbine fell under the auspice of an appurtenant structure and could be insured under a separate insurance policy for the decommissioning plan. Had she been willing to do this, these types of structures are assessed and charged at a lower rate. "Annual premiums are about $2.50 per $1,000 of value." [2] Additionally, since homeowner's insurance claims are typically for fire damage, the likely insurance premium would be slightly lower than a wind turbine installed in a rural area, since this wind turbine is approximately 1.5 miles from the closest fire station.

It was also discovered that the cost to perform this decommissioning would be prohibitively expensive for the homeowner. Costs for this decommissioning were estimated at ~$20,000.00. (See "table 3: estimated costs for decommissioning an aero power sl1500 small wind turbine" on page 32) Because of all the involved complexity required for decommissioning of this wind turbine, in early May 2013, the City of Berkeley Officials agreed to step-in and afford the homeowner guidance on how to best proceed.

[1] Mick Sagrillo, [Email] [Cited: February 23, 2012 3:12:03 PM PST]

[2] Chiras, Dan. "Power from the Wind: Achieving Energy Independence." Gabriola Island, BC, Canada: New Society Publishers, 2009. Print.

A few small wind energy experts have emphatically shared that this turbine needs to come down post-haste before there is loss of life or property. As of this writing, this machine still has not catastrophically failed mechanically; a testament to its designer, Mario Agnello. However, all this time it has been derelict and dangerous, making its catastrophic failure imminent, and a potential public safety hazard.

When this wind turbine is finally decommissioned, it is earmarked for donation for future study and research at the UC Berkeley Renewable and Appropriate Energy Lab (RAEL) Richmond, CA Field Laboratory.

NB: The following information is based on a projected time line. Unfortunately, a fundraising campaign conducted in late-April through early-May 2013 in behalf of procuring funds to pay for the costs of decommissioning this wind turbine fell short. So, this case study only achieved completing Stage 3 of this process plan. Stages 4-8 are projections. The development phases for the decommissioning planning process follows (See “figure 1: decommissioning planning process” on page 31):

Consenting Phase

In the Consenting Phase, the aim is to clarify and understand the basis for any objections and the decommissioning risks, and where possible, identify potential solutions. This phase involves and includes:

Stage 1

- Site identified for decommissioning
- Preliminary research undertaken
- Preliminary permits applications investigated
- Public interaction and discussions with stakeholders

Stage 2

- Project scoped out
- Budget cost estimate
- Local planning authority engagement and opinions offered
- Identify challenges and restrictions
- Fund raising opportunities investigated for covering decommissioning costs
- Public interaction and discussions with stakeholders

Stage 3

- Site data measurements taken
- Project logistical and feasibility considerations investigated
- Initial, formal consultation with interested, potentially affected parties
- Assessments conducted including a historical assessment

Stage 4

- Formal permits submitted
- Submission of electrical grid de-energizing application with local utility, if needed
- If applicable, decommissioning plan application submitted

Review Phase

In the Review Phase, the aim is to address any outstanding objections received from key statutory professionals, officials and stakeholders, and to ensure that any objections identified are mitigated. This phase involves and includes:

Stage 5

- Reviews and modifications of the decommissioning plan
- Ongoing consultation with community and stakeholders
- Statutory objections addressed

Decommissioning Phase

In the Decommissioning Phase, the aim is to put into action the decommissioning plan. This phase involves and includes:

Stage 6

- Agreements and approvals for program plan is approved by authority under relevant permit or licensing conditions
- Final site decommissioning sign-off obtained
- Ongoing interaction with community and stakeholders

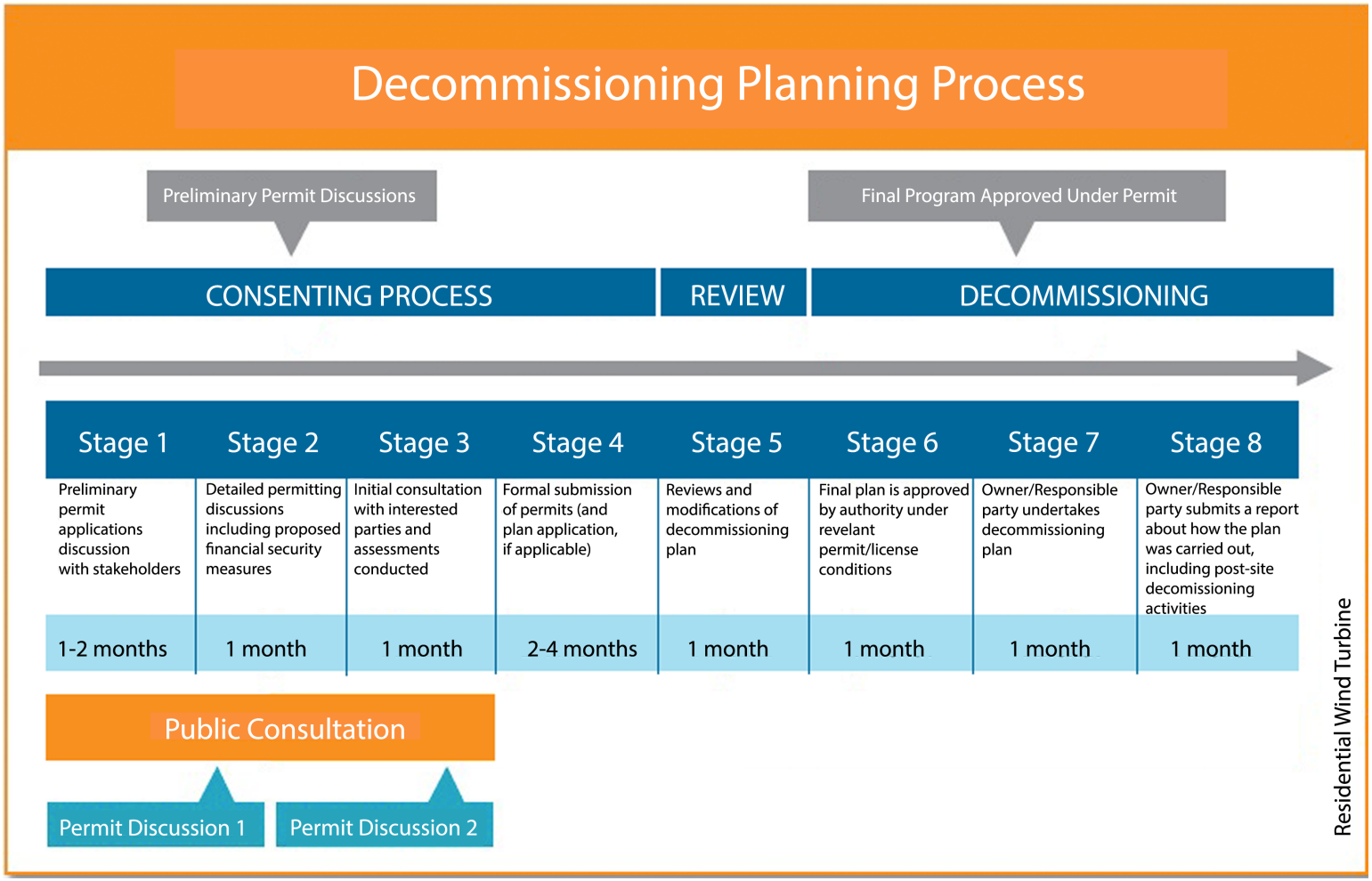
Stage 7

- Owner/Responsible party undertakes the decommissioning plan
- Wind turbine donated to local university for continued research
- Ongoing interaction with community and stakeholders

Stage 8

- Owner/Responsible party submits a report to the statutory bodies and local authorities about how the plan was carried out.
- Enumerate post-site activities
- Final plan program is approved under the permit issued
- Validation obtained from the local authority

figure 1: decommissioning planning process



DECOMMISSIONING COST (in current dollars)		
Planning	Includes an asbestos survey and report, miscellaneous City of Berkeley paperwork, wind expert consultations	$2,262.00
(On-site) Wind Turbine Expert	2 days; pre-planning, decommissioning, 8 hours/day	$3,300.00
PG&E	Budget for Utility Clearance an to de-energize circuits. Includes 3 PG&E personnel for 8 hours	$7,000.00
City of Berkeley Permits	Electrical, Demolition, Zoning, Encroachment	$3,045.00
Crane	Includes the crane rental, operator, rigger for 8 hours	$2,800.00
Incidentals	Tools (cutting saw), miscellaneous	$2,500.00
CA Licensed C10 Electrician	8 hours x 2 days; 16 hours total	$1,500.00
Electrical Line Worker/Tree Climber	1 day, to assist the wind turbine expert, 8 hours	$250.00
Hauling	For mast to the recycler	$160.00
TOTAL REMOVAL COST		**$22, 817.00**
Salvage value of mast	1.5 to 2.0/NT @ $235.00 NT* based on current market rate($325.50-$470.00)	-$470.00
ESTIMATED COST OF DECOMMISSIONING		**$22,491.00**

* Net tonne

table 3: estimated costs for decommissioning an aero power sl1500 small wind turbine

appendix

Small Wind Turbines in the Built Environment Decommissioning Guideline

a - acronyms & abbreviations

CEC
California Energy Commission

CPUC
California Public Utilities Commission

C10
Classification identifier for California Electricians

EIA
Environmental Impact Analysis

ES
Environmental Statement

O&M
Operation & Maintenance

OSHA
Occupational Safety & Health Administration

PG&E
Pacific Gas & Electric

PRA
Public Records Act

SL1500
Model number for the Aero Power SL1500 wind turbine

WTG
Wind Turbine Generator

b - city of berkeley, ca, usa permit & application exhibits

Exhibits follow on the next pages.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

DEMOLITION
REGULATION 11, Rule 2

Notification Form

For Office Use Only
J#_____
I#_____

Site of Demolition

Site Address: _____ **Cross Street:** _____
City: _____ **Zip:** _____
Owner/Operator _____ **Phone ( )** _____
Specific Location of Project within Building/Address: _____
Check One: ☐ Single Family Dwelling ☐ Commercial ☐ Multifamily Dwelling ☐ Govt Bldg ☐ School

Contractor/Individual Performing Demolition

Name: Company/Individual _____ **Contact:** _____
Mailing Address: _____
City: _____ **Zip:** _____ **Phone: ( )** _____
Have you previously submitted notifications for other sites? ☐ **Yes** ☐ **No**

Description of Demolition

Is this Demolition by Fire for Fire Training purposes? ☐ yes ☐ No
Is this Demolition ordered by a Government Agency? ☐ yes ☐ No
(Emergency only – attach copy of order)
If not Demolition for Fire Training, check applicable method:
☐ Heavy Equipment ☐ Implosion ☐ By Hand ☐ Other _____

Dates of Demolition: (***Actual*** dates must be entered, ***"ASAP"*** or ***"SOON***" will be rejected.)
Start: _____ Completion: _____ ☐ Weekend Work? ☐ Night Work *(After 5 PM)?*

Asbestos Survey Report

Name of company that conducted survey: _____
Address: _____
City: _____ **Zip:** _____ **Phone: ( )** _____
Name of person who completed the survey: _____ **CAC/SST #:** _____
Is /was asbestos present? ☐ **Yes** ☐ **No**
If yes, who will remove/has removed prior to demo? _____

Form Preparation Information

This form prepared by: _____ **Title:** _____
Name: Company/Individual _____ **Phone: ( )** _____
Address: _____ **City:** _____ **State:** _____ **Zip:** _____

See Page Two to Complete This Form

Press here to clear form

Required Information

Payment must be received before J# will be assigned.

Payment type: ☐ Check ☐ Cashier's Check ☐ Money Order ☐ Credit Card***** (Visa, MasterCard Only)
(*payments, other than credit card payment, must be mailed or delivered to: 939 Ellis St., San Francisco, CA 94109)*

I certify that the above information is correct and that I will comply with all of the requirements of the BAAQMD's regulations, as well as all other applicable federal, state and local requirements.

Signature of Contractor or Person Performing Demolition: _____

GENERAL INFORMATION

- This notification form shall be used to notify the BAAQMD of a **demolition** operation only. Notification is required for every demolition. All boxes must be completed. ***Notification forms may be faxed to (415) 749-4658**, but the ***credit card payment form must be faxed separately to (415) 749-4969.*** Job numbers will not be issued until applicable fees are received.
- Notification shall be provided to the District at least 10 working days prior to commencement of demolition, or as early as possible prior to commencement of emergency demolition. The notification period will not start until a complete notification is submitted.
- An Acknowledgement Letter is mailed to the contractor/individual listed upon receipt of a complete notification. This should be checked for accuracy of data.
- If the job is postponed or cancelled, the District **must** be notified of a revision; the Acknowledgement Letter should be used to fax or mail the revision information. When cancelled, a cancellation fee will apply.
- For specific "Emergency" conditions, the 10 working day period will be waived. Notification must be made by fax, and the job number will be issued if accompanied with a faxed copy of a valid check, cashier's check or money order.
- For residential structures with 4 or fewer units, the 10 working day period may be reduced to 72 hours for an additional fee.

INSTRUCTIONS

- **SPECIFIC LOCATION OF PROJECT**: Identify where the demolition is taking place if the site contains more than one building.
- **START AND COMPLETION DATES**: The start date is the date on which demolition of the facility or structure commences. Any revision to the start or completion dates must be submitted prior to the previously notified date(s). Under no circumstances may the revised start date be earlier than the 10th working day following the postmark or fax date of the original notification. If the start date is unknown, enter an estimated start date and revise the notification when the actual start date is known, but not later than the estimated start date.
- **FIRE TRAINING**: Reg. 11-2-206 includes "intentional burning" in the definition of demolition. Notification is required, the 10 working day requirement must be met and all Asbestos-Containing Material (ACM) >1% must be removed prior to fire training. The District's Open Burning Notification form must also be filed and the applicable requirements of Regulation 5 must be met.
- **SURVEY REPORT**: See page 3 for survey requirements for your demolition.
- **GOVERNMENT ORDERED DEMOLITION**: If an "Emergency" demolition (see above) is the result of a state or local agency declaring the building a public nuisance or structurally unsound and in danger of imminent collapse, a copy of the written order must accompany this notification.

FEES APPLICABLE TO DEMOLITION OPERATIONS (FROM REGULATION 3, SCHEDULE L)

Demolition **conducted at a single family** dwelling is subject to the following fee:

OPERATION FEE: $63

Cancellation: $63 (100% of fee) non-refundable, for notification processing.

Demolition **conducted at a single family dwelling or multiple family dwelling with four or fewer units with 72 hours instead of 10 days prior notice (excluding emergencies)** is allowed upon payment of the following **additional** fee:

OPERATION FEE: $437

Demolition, **other than those conducted at a single family dwelling**, is subject to the following fee:

OPERATION FEE: $262

Cancellation: $175 of above amount non-refundable for notification processing.

Demolition conducted for the purpose of **fire training** is exempt from fee.

SURVEY REQUIREMENTS FOR DEMOLITION OPERATION (FROM REGULATION 11, RULE 2)

303.8 Surveys: Except for ordered demolitions, prior to commencement of any demolition or renovation, the owner or operator shall thoroughly survey the affected structure or portion thereof for the presence of asbestos-containing material, including Category I and Category II nonfriable asbestos-containing material. The survey shall be performed by a person who is certified by the Division of Occupational Safety and Health, and who has taken and passed an EPA-approved Building Inspector course and who conforms to the procedures outlined in the course. The survey shall include sampling and the results of laboratory analysis of the asbestos content of all suspected asbestos-containing materials. This survey shall be made available, upon request by the APCO, prior to the commencement of any RACM removal or any demolition. This subsection shall not apply if the owner or operator asserts that the material to be renovated is RACM and will be handled in accordance with the provisions of Sections 11-2-303, 304 and 401. The requirement for certification by the Division of Occupational Safety and Health shall not apply to in-house health professionals within a specific nonasbestos related company who perform occasional surveys only for that company as part of their regular job responsibilities

8.1 When a structure, or portion thereof, is demolished under an ordered demolition, the survey must be done prior to, during, or after the demolition but prior to loading or removal of any demolition debris. If the debris contains regulated asbestos-containing material, all of the debris shall be treated as asbestos-containing waste material pursuant to Section 11-2-304.

8.2 For renovation or demolition of residential buildings having four or fewer dwelling units, a survey is not required. A sample and test of the material will be required only when any of the following will be removed or disturbed: heating, ventilation, air conditioning ducting and systems; acoustic ceiling material or acoustic plaster; textured or skim coated wall surfaces, cement siding or stucco, or resilient flooring. Where the material is found to contain greater than 1 percent asbestos and is friable, the material must be handled in accordance with Section 11-2-303.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

CREDIT CARD PAYMENT FORM

(District accepts Visa and MasterCard ONLY)

Fax this form directly to the District Finance Office at

415-749-4969*

* use a separate form for each job notification

Amount Paid $ (required) _____

Site Address:				
City:				
Zip :				
Project Description:	☐ Demolition	☐ Renovation		
Removal Amount (of regulated asbestos):	lin ft	sq ft	cu ft	

CREDIT CARD INFORMATION:

Name as Appears on Card: _____

Company Name: _____

Card Billing Address: _____

Billing Address Zip Code: _____

Card No: _____

CVV2 Code (3 digit code on reverse side of card) _____

Expiration Date: _____

Authorized Signature (required): _____

Authorized Signature indicates that you are approving the Bay Area Air Quality Management District to charge to your credit card for the amount due and payable as indicated above.

Card holder's phone # (required): _____

☐ Check if you would like a receipt

Fax # or email address: _____

939 Ellis Street • San Francisco California 94109 • 415.749.INFO (4636)
Fax: 415-749-4969 • http://*www.baaqmd.gov*

PLANNING & DEVELOPMENT
2120 Milvia Street, Berkeley, CA 94704 Tel: 510.981.7500 TDD: 510.981.6903 Fax: 510.981.7505
Email: Planning@ci.berkeley.ca.us

AN APPOINTMENT IS NEEDED TO SUBMIT A DEMOLITION APPLICATION. CALL (510) 981-7502 FOR AN APPOINTMENT

DEMOLITION PERMIT CHECKLIST

Demolition is defined as: (City of Berkeley Zoning Ordinance 6478-N.S., Sect. Sub-title 23F)

*A building or enclosed structure shall be considered demolished for the purposes of this chapter when, within any continuous 12 month period, such building or enclosed structure is destroyed in whole or in part or is relocated from one lot to another. For purposes of this Section, destroyed in part means when 50% or more of the enclosing exterior walls and 50% or more of the roof are removed. Removal of facades or portions of facades is subject to **Chapter 23E.12**.*

- ☐ **Address and Building Description** _____
  _____
- ☐ **Reason for Demolition** _____
  _____
- ☐ **Building Permit Application**
- ☐ **Demolition Permit Application**
- ☐ **Zoning Certificate Application**
- ☐ **"J" Number from Bay Area Air Quality Management District, (415) 771-6000 or 1-(800) HELP AIR or on the web at www.baaqmd.gov**
- ☐ **If the structure to be demolished has any Gas or Electrical Utilities, applicant must have a UTILITY CLEARANCE from PG&E upon submittal of the demolition application.**

PLANNING & DEVELOPMENT
2120 Milvia Street, Berkeley, CA 94704 Tel: 510.981.7500 TDD: 510.981.6903 Fax: 510.981.7505
Email: Planning@ci.berkeley.ca.us

- ☐ **Waste Diversion Plan submitted to Solid Waste Management (BMC 19.24) 1201 Second Street, Berkeley CA, 94710, (510) 981-6368, www.cityofberkeley.info/ContentDisplay.aspx?id=46678**
  Demolitions with a valuation over $50,000.

- ☐ **Site Plan: 2 Sets**
  Dimensioned drawing on 11" x 17" paper – Provide a complete plot plan (Overhead view) showing lot dimensions, property lines, yard setbacks, street name(s) and north arrow. Show location of all structures on the property, driveway(s) and identify off street parking locations (garage or other designated space(s)). Clearly indicate location of demolition work on plans and distance to property lines.

- ☐ **2 complete copies of Approved Use Permit, if applicable.**

- ☐ **Photographs: 2 Sets**
  Color photograph or color copies of building/structure to be demolished mounted on 8½" x 11" paper.

- ☐ **Building &Safety, Environmental Health, Fire and Zoning Plan Check Fees required with submittal of Demolition Permit Application.**

PERMIT SERVICE CENTER
2120 Milvia Street, Berkeley, CA 94704 Tel: 510.981.7500 TDD: 510.981.6903 Fax: 510.981.7505
Email: Planning@ci.berkeley.ca.us

Demolition Permit Application

"J" No. _____ **Permit App. No.** _____

Application is hereby made to the City of Berkeley, Planning and Development Department, Permit Service Center for a Demolition Permit to demolish:

☐ Accessory/Shed ☐ Residential/Dwelling(s) ☐ Garage/Carport ☐ Commercial ☐ Industrial
for the building located at _____
(address)

The subject building(s) is/was declared:

☐ **Unsafe and a public nuisance under Ordinance No. 7005-N.S., Section A115, and summary abatement procedures instituted by the Planning and Community Development Department on February 04, 2007. (*Fire Department to sign off on all unsafe and public nuisance properties.)**

☐ Authorized by the Zoning Adjustments Board under provisions of **Zoning Ordinance No. 6478-N.S**. by the granting of Use Permit Number _____ Dated_____.
(2 copies of approved Use Permit must be attached with this application).

SPECIFICATIONS

1. Garage/Carport demolition requires Land Use (Zoning) approval to verify compliance with parking requirements. For further information contact the Land Use Division at **(510) 981-7410**, or visit the Zoning Counter.
2. To rebuild non-conforming accessory structures by right, a permit for the new building must be issued prior to the demolition permit. For further information contact Land Use Division at **(510) 981-7410**, or visit the Zoning Counter.
3. In most cases, demolition of a main building is only allowed after issuance of a permit for a new building. For further information contact Land Use Division at **(510) 981-7410**, or visit the Zoning Counter.
4. A fire sprinkler system may be required if there is more than 150 feet from a road to the most remote portion of the new structure rear wall through an approved route.
5. All wood, debris, rubble, foundation and abandoned vehicles must be removed.
6. When a cleared lot is to be undeveloped for more than thirty (30) days, open portions shall be graded and either planted or treated with dust-free surfacing.
7. Demolition shall be done at a time when dust, debris, noise and hazard are minimized.
8. If there is a hazard to pedestrians and vehicles as determined by the Building Official, a protective barrier shall be erected. Protection must be provided in place in accordance with **Chapter 33, Section 3306** of the California Building Code and the City of Berkeley Pedestrian Protection guidelines.
9. Driveways, sidewalks and curbs damaged as a result of the demolition work should be repaired with in-kind material.
10. By **City Ordinance No.-N.S. 3380**, no street trees, shrubbery in the City right-of-way shall be damaged and/or destroyed by demolition work. The City's Forestry Supervisor shall be called at **510.981.6660** for free inspection of special situations.

PERMIT SERVICE CENTER
2120 Milvia Street, Berkeley, CA 94704 Tel: 510.981.7500 TDD: 510.981.6903 Fax: 510.981.7505
Email: Planning@ci.berkeley.ca.us

11. A Performance Bond, as determined by the Building Official, may be required.
12. A Public Works Temporary Right-of- Way Use Permit must be obtained if the public right-of-way is used for staging. This includes perimeter fencing, debris boxes, or containers on the public right-of-way.
13. A utilities Clearance letter from PG&E indicating that electrical and gas utilities to the building have been disconnected must be submitted with the demolition permit application. Note: This does **not** apply for partial demolitions or accessory structures.
14. Street Use Permit must be obtained prior to the start of work. This permit will not be issued until the applicant has obtained a utility clearance from PG&E stating that all utilities have been disconnected.
15. If the building sewer will **not** be re-used for new construction, it must be abandoned at the point at which it enters the main. A Public Works permit for sewer capping must be obtained. If the building sewer will be re-used, the sewer shall be capped 18" behind the curb and must be inspected and approved by the Public Works Department prior to commencement of demolition.
16. A Demolition Permit shall be obtained and all fees paid **BEFORE** proceeding with demolition.
17. Applicant is to schedule a final building inspection once structure has been demolished and all debris has been removed from the site. **(Provide this note on the site plan)**
18. Lead based paint chips must be contained and disposed of as a hazardous waste. Call **Alameda County Household Hazardous Waste Facility (HHWF) at (800) 606-6606** or visit their website at **www.stopwaste.org** for more information.
19. Berkeley residents can properly dispose of unwanted household chemicals (paint and thinners, oil, fuel, pesticides, cleaners, etc.) at the HHWF.
20. A Recycling Plan is required for demolitions with a valuation over $50,000. File the Recycling Plan with the City of Berkeley's Solid Waste Management Division, **1201 2nd Street.** Questions regarding filing of or approval to the Recycling Plan should be directed to Solid Waste Management, **(510) 981-6368. www.cityofberkeley.info/ContentDisplay.aspx?id=46678**
21. Treated Wood Waste (TWW) is hazardous waste and requires special handling and disposal. Please see the Department of Toxic Substance Control's "Requirements for Generators of TTW" fact sheet at **www.dtsc.ca.gov** for more information.
22. Vector Control reviews rodent control plans, waste accumulations, chemical hazardous and removal of debris is accordance with Health and Safety violations prior to the demolition of the project.

I certify that I have read the Specifications above and the information is true and correct. I agree to comply with these "Specifications."

Applicant Signature		Date	
Land Use Planning	Date	Environmental Health	Date
P.W. Eng/Traffic	Date	Fire Marshal	Date
Building Official	Date	Reserved	Date

PLANNING & DEVELOPMENT
Permit Service Center
2120 Milvia Street, Berkeley, CA 94704
Main Tel: 510.981.7500 TDD: 510 981-6903 Fax: 510 981-7505
Scheduling Inspections: 510 981-7444 Building Inspectors: 510 981-7440
Email: Planning@ci.berkeley.ca.us

Building Permit Application

SHADED AREAS FOR STAFF USE ONLY

APPLICATION # _____	APN # _____	USE PERMIT # _____

STREET ADDRESS / UNIT #(if applicable) ☐ **BUILT BEFORE 1978**

TOTAL PROJECT SQUARE FEET	✸ **VALUATION ($)**

✸ - *The valuation used in computing the Building Permit fee shall include total value of work, including materials and labor, for which the permit is being issued, such as electrical, gas, mechanical, plumbing equipment and permanent systems.*
BMC SECTION 19.28.20

☐**NEW** ☐**ADD** ☐**DEMO>DEM** ☐**REMODEL>REM** ☐**REPAIR>REP** ☐**SEISMIC** ☐**GRADING** ☐**OTHER (Describe Below)**
☐**OWNER-BUILDER**

Fire Zone 1☐ 2☐ 3☐ **Alquist Priolo:** Yes☐ No ☐ **Flood Zone:** A☐ B☐ C☐
Liquefaction Zone: Yes ☐ No ☐ **Landslide Area:** Yes☐ No ☐
Creek on the Parcel: Yes☐ No ☐ **Work in the Right of Way:** Yes ☐ No ☐

Is this a Residential Rental Unit: ☐Yes ☐ No	**If YES, does the tenant need relocating?** ☐Yes ☐ No

DESCRIBE SCOPE OF WORK:

ADDITIONAL PERMITS REQUIRED: ☐ **Electrical** ☐ **Mechanical** ☐ **Plumbing** ☐ **Other**_____

	Construction Type	Occupancy Code	Square Footage	#Residential Units	#Stories
EXISTING					
PROPOSED					

Property Owner Name Phone #	**Applicant/Contact Person** Phone#
Address	**Address**
City, ST Zip	**City, ST** Zip
Email address	**Email address**

Contractor's Company Name Phone #		**Licensed Design Professional Name**	
State Lic#	**Bus Lic #**	**State Lic#**	**Phone #**
Address		**Address**	
City, ST Zip		**City, ST** Zip	
Email address		**Email address**	

PERMIT DECLARATIONS for FAX or Mail-In Only

☐ **LICENSED CONTRACTOR'S DECLARATION AND INFORMATION**

I hereby affirm under penalty of perjury that I am licensed under provision of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

License Class _____ License No. _____

Date _____ Contractor _____

☐ **OWNER BUILDER DECLARATION**

I hereby affirm under penalty of perjury that I am exempt from the Contractors' State License Law for the following reason (Sec. 7031.5, Business and Professions Code:

Any city that requires a permit to construct, alter, improve, demolish or repair any structure, prior to its issuance, also requires the applicant for the permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contrators' State License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).):

☐ I as owner of the property, or my employees with wages as their sole compensation, will do (_) all of or (_) portions of the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professions Code: The Contractors' State License law does not apply to an owner of property who builds or improves thereon, and who does the work himself or herself or through his or her own employees, provided that the improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he or she did not build or improve for the purpose of sale.).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors' State License Law does not apply to an owner of property who builds or improves thereon, and who contracts for the projects with a contractor(s) licensed pursuant to the Contractors' State License Law.). **Provide contractor information above.**

☐ I am exempt from licensure under the Contractors' State License Law for the following reason: _____

NOTE: To obtain permit, the owner-builder must also submit completed Owner-Builder Verification of Information & Limitation of Sale Forms. (Permit Supplement 1) . When executed by a person other than the property owner, owner must also sign the Authorization of Agent to Act on Property Owner's Behalf form prior to issuing of permit. (Permit Supplement 2) .

☐ **AUTHORIZED AGENT DECLARATION**

I hereby affirm under penalty of perjury that I am the authorized agent of: ☐ **CONTRACTOR** ☐ **OWNER** _____

Print Name of Agent

Address: _____

_____

Phone No. _____

NOTE: A permit applicant who files a signed document by facsimile transmission (fax) with the City of Berkeley Permit Service Center represents that the original signed document is in his or her possession or control. At any time after filing the document, the City may demand production of the original physically signed document. Notwithstanding any provision of the law to the contrary, the City of Berkeley will treat a signature produced by facsimile transmission as an original.

WORKERS' COMPENSATION DECLARATION (This section need

I hereby affirm under penalty of perjury one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for workers' compensation, issued by the Director of Industrial Relations as provided for by Section 3700-3800 of the Labor Code, for the performance of the work for which this permit is issued. POLICY NUMBER _____

☐ I have and will maintain workers' compensation insurance, as required by Section 3700-3800 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

CARRIER: _____ POLICY NUMBER _____

EXPIRATION DATE: _____ NAME OF AGENT:_____ PHONE #:_____

☐ I certify that, in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the worker's compensation laws of California, and agree that, if I should become subject to the workers' compensation provisions of Section 3700-3800 of the Labor Code, I shall forthwith comply with those provisions.

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

CITY ORDINANCES DECLARATION (Ordinances available for view on request)

☐ In conformance with the City of Berkeley Noise Ordinance, and/or Use Permit, I understand my obligation to comply and work within prescribed hours.

☐ I am aware of my responsibilities under the Relocation Ordinance.

☐ I certify that I have read and shall use to the maximum extent practicable applicable portions of the *State Storm Water Best Management Practices Manual for Construction*.

CONSTRUCTION LENDING AGENCY DECLARATION

☐ I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C.).

Lender's Name: _____

Lender' Address: _____

☐ **BUILDING & SAFETY – Certificate Of Compliance And Authorization Of Entry:** By my signature below, I certify to each of the above and the following: I am the property owner or authorized to act on the property owner's behalf. I have read this application and state that the information given is correct. I agree to comply with all state laws and city and county ordinances relating to building construction and authorize a representative of the City of Berkeley Building and Safety Division to enter upon the property for which I have applied for this permit for the purpose of making inspections.

☐ **ENGINEERING – Certificate Of Indemnification and Compliance:** By my signature below, I hereby agree to indemnify and hold harmless the City of Berkeley and its officers and employees from any and all claims arising from, or out of work, connected with this permit and to perform all work as specified in BMC Title 16 and 17 as amended, and in specifications, detail plans and the Building Codes of the City of Berkeley, and in all special provisions made a part of this permit, whether written or oral, and to the satisfaction of the Director of Public Works. I further agree to comply with all regulations and ordinances of the City of Berkeley.

CONTRACTOR , OWNER, or AUTHORIZED AGENT SIGNATURE (**Circle One**) **I hereby affirm under penalty of perjury that each of the above declarations are true.**

SIGNATURE: _____ **DATE:** _____

(Print)

PLANNING & DEVELOPMENT
Land Use Planning, 2120 Milvia Street, Berkeley, CA 94704
Tel: 510.981.7410 TDD: 510.981.7474 Fax: 510.981.7420 Email: Planning@CityofBerkeley.info

ZONING CERTIFICATE APPLICATION

FOR BUILDING PERMIT APPLICATIONS

Applicants, please complete the following legibly (in ink) that are applicable: Building Permit # _____

Project Address: _____

Project Description: _____

If a Use Permit was issued for this project, list Permit # _____ If Design Review has occurred, check here ____

New Building or Structure Total New Gross Floor Area: _____ gross sq.ft.

Proposed Use: _____

Existing Building: Existing Use: _____

Proposed Use: _____

____ Exterior/Façade Changes only: _____

____ Addition to existing structure: Floor Area of addition: _____ gross sq.ft.

____ Ground Floor Addition ____ Expand Other Floors

____ Remodel of Existing Building: Are any of the following proposed?

Addition or removal of: Any interior walls? _____ Kitchens? _____ Mezzanines/lofts _____

____ Conversion of basements, cellars, attics, or garages to useable/habitable floor area? _____

____ Addition, expansion, or replacement of decks? _____

Demolitions - Whole or partial _____ Check here if removal or replacement of a portion of existing structure

(Note: Removal of 50% or more of the exterior wall area and 50% or more of the roof of a building is a "Demolition" under the Zoning Ordinance)

Addition or removal of covered or uncovered parking spaces?

If Yes, Explain: _____

	Applicant	Property Owner
Name:		
Address:		
City, St, Zip		
Phone No:	( )	( )

Applicant's Signature _____ Date / /

Note: Property Owner's authorization is required for all permits, and written approval may be required as a condition of approval.

STAFF USE ONLY Zoning District: _____ Ord. Sect. # _____ **Zoning Cert. #** _____

Approved By: _____ Date: / / Fee: $ _____ Intake Planner: _____

Comments:

g:\landuse\forms & instructions\land use planning forms\fees\2010 internal fee intake sheets\final_zc_building permit 2010-08-02.doc

PLANNING & DEVELOPMENT
Land Use Planning, 2120 Milvia Street, Berkeley, CA 94704
Tel: 510.981.7410 TDD: 510.981.7474 Fax: 510.981.7420 Email: Planning@CityofBerkeley.info

Zoning certificate fees for building permit applications

Fee category	Fee amount	Comment
Commercial		
Non-residential construction (unless listed below)	$180	Including tenant improvements
Construction of by-right new commercial floor area	Calculated at $180 per 1,000 sq. ft of newly constructed floor area or major fraction thereof	Includes by-right additions and new buildings
Construction of by-right live work units	Calculated at $180 per live work unit	
Residential		
Residential additions/improvements	$180	
Discretionary Permits (Construction associated with)		
Construction associated with an Administrative Use Permit	$180	
Construction associated with a Use Permit	$360	

BERKELEY CONSTRUCTION/DEMOLITION WASTE DIVERSION PLAN

Complete the Waste Diversion Plan with as much detail as possible. Your contractor or architect can provide you with the estimated cost of the construction or demolition. Please provide accurate contact information for the person responsible for completing the Waste Diversion Plan and the Waste Diversion Report. Briefly describe material (e.g. wood-scraps, concrete-driveway, roofing – asphalt shingle. Check the use columns.

Check all that apply:	DEMOLITION	NEW CONSTRUCTION	REMODEL

Permit # (optional)	Project Address:	Est. Start date:
Contact Name:	Contact Title:	Project Value:
Contact Address:	City:	Zip:
Phone:	Fax:	E-Mail:
Project Summary (ex. demolish 6000 sf wood frame & stucco building, parking lot.)		

. MATERIAL	DESCRIBE	REUSE	RECYCLE	COMPOST	LANDFILL	DESTINATION(S)
Asphalt						
Brick, Masonry, Tile						
Cardboard						
Carpet, padding/foam						
Concrete						
Dirt & Rock						
Metals						
Plant Debris						
Sheetrock (not painted)						
Clean wood (not painted or treated, nails ok)						
Roofing (type?)						
Reusable Items						
Wood - painted, plywood						
Other Debris						

What deconstruction will you do? If none, state why not. (Salvaged items from deconstruction count towards your diversion rate.)

I acknowledge that I understand the diversion requirements of BMC 19.24 and submit this plan in partial compliance of the ordinance	
Signature	
Print Name:	Title:

Please return this form to 1201 2nd Street, Berkeley, 94706; fax it to 981-6360 attn: Tania Levy or email it to tlevy@ci.berkeley.ca.us. For more information and technical assistance, call 981-6368.

This project Requires ___ Does not require_____ a report after completion. If report is required, please save your receipts from disposal and recycling locations. You will need them to document your recovery percentage. For reuse on site a description of materials and use is sufficient.

SWMD Staff Signature:_____DATE:_____

PLANNING & DEVELOPMENT

Permit Service Center
2120 Milvia Street, Berkeley, CA 94704
Main Tel: 510.981.7500 TDD: 510 981-6903 Fax: 510 981-7505
Scheduling Inspections: 510 981-7444 Building Inspectors: 510 981-7440
Email: Planning@ci.berkeley.ca.us

Electrical Permit Application

SHADED AREAS FOR STAFF USE ONLY

APPLICATION # _____

STREET ADDRESS / UNIT # (If applicable)	TENANT NAME

TOTAL PROJECT SQUARE FEET	VALUATION

APPLICATION GROUP:

❑ NEW ❑ ADD ❑ DEMO>DEM ❑ REMODEL>REM ❑ REPAIR>REP

Contractor Name	Phone#
Address	State Lic# Bus Lic#
City, ST	ZIP Code

Property Owner Name	Phone#
Address	
City, ST	ZIP Code

Applicant/Contact Person	Phone#
Address	FAX#
City, ST	ZIP Code
Email	

Misc. Comments (Brief Job Description)

Minimum Permit Fee $100.00 + Filing Fee $22 + 5% Technology Fee =

MIMIMUM ELECTRICAL PERMIT FEE OF $127.00

Fees For Electrical Permit (Indicate Quantities)

	Fee Description	**Fee/Units**
	Hourly Plan Check/Inspection Fee	$170.00/hr
Qty	**Fee Description**	**Fee/Units**
	Service, Each 100 Amps (w/ Meter and Existing Circuits)	$11.90 ea
	Large Projects – elect work>$100,000	1% of value
	Res New/Add Per 100sf (includes outlets, switches & lights only)	$15.00/ea 100sf
	Receptacle / Switch / Light	$2.70 ea
	Alter Wiring, Each Change (including subpanel/s)	$26.10 ea
	Solar Panels	$26.10
	Branch Circuits-Each	$4.80 ea
	Fixed Appliance Outlet	$11.10 ea
	Meter (New or Changed)	$7.20 ea
	Temp Power Pole/per100 Amps	$26.50 ea
	Motor up to 10 HP	$7.10 ea
	Motor over 10HP, Each HP	$1.90 ea
	Generator up to 10KV	$7.20 ea
	Generator over 10KV, Each KV	$1.90 ea
	Transformer up to 10KV	$4.80 ea
	Transformer over 10KV, Each KV	$1.90 ea
	Signs, Outline Light/KV	$26.50 ea
	X-Ray Capacitors/misc	$26.50 ea
	Festoon Lighting (per system)	$10.00 ea

# of Stories_____ ☐ Single Family Residential
☐Multi-Family Residential ☐ Commercial

NOTE: If this is a fax-in permit, complete the Permit Application Information on the reverse side of this form.

Rev. 08/2010

PERMIT DECLARATIONS for FAX or Mail-In Only

☐ **LICENSED CONTRACTOR'S DECLARATION AND INFORMATION**

I hereby affirm under penalty of perjury that I am licensed under provision of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

License Class _____ License No. _____

Date _____ Contractor _____

☐ **OWNER BUILDER DECLARATION**

I hereby affirm under penalty of perjury that I am exempt from the Contractors' State License Law for the following reason (Sec. 7031.5, Business and Professions Code:

Any city that requires a permit to construct, alter, improve, demolish or repair any structure, prior to its issuance, also requires the applicant for the permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contrators' State License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).):

☐ I as owner of the property, or my employees with wages as their sole compensation, will do (_) all of or (_) portions of the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professions Code: The Contractors' State License law does not apply to an owner of property who builds or improves thereon, and who does the work himself or herself or through his or her own employees, provided that the improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he or she did not build or improve for the purpose of sale.).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors' State License Law does not apply to an owner of property who builds or improves thereon, and who contracts for the projects with a contractor(s) licensed pursuant to the Contractors' State License Law.). **Provide contractor information above.**

☐ I am exempt from licensure under the Contractors' State License Law for the following reason: _____

NOTE: To obtain permit, the owner-builder must also submit completed Owner-Builder Verification of Information & Limitation of Sale Forms. (Permit Supplement 1) . When executed by a person other than the property owner, owner must also sign the Authorization of Agent to Act on Property Owner's Behalf form prior to issuing of permit. (Permit Supplement 2) .

☐ **AUTHORIZED AGENT DECLARATION**

I hereby affirm under penalty of perjury that I am the authorized agent of: ☐ **CONTRACTOR** ☐ **OWNER** _____

Print

Name of Agent

Address: _____

_____

Phone No. _____

NOTE: A permit applicant who files a signed document by facsimile transmission (fax) with the City of Berkeley Permit Service Center represents that the original signed document is in his or her possession or control. At any time after filing the document, the City may demand production of the original physically signed document. Notwithstanding any provision of the law to the contrary, the City of Berkeley will treat a signature produced by facsimile transmission as an original.

WORKERS' COMPENSATION DECLARATION (This section need not be completed if the permit valuation is for five hundred dollars ($500) or less.)

I hereby affirm under penalty of perjury one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for workers' compensation, issued by the Director of Industrial Relations as provided for by Section 3700-3800 of the Labor Code, for the performance of the work for which this permit is issued. POLICY NUMBER _____

☐ I have and will maintain workers' compensation insurance, as required by Section 3700-3800 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

CARRIER: _____ POLICY NUMBER _____

EXPIRATION DATE: _____ NAME OF AGENT:_____ PHONE #:_____

☐ I certify that, in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the worker's compensation laws of California, and agree that, if I should become subject to the workers' compensation provisions of Section 3700-3800 of the Labor Code, I shall forthwith comply with those provisions.

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SIGNATURE: _____ **DATE:** _____

Department of Public Works
Engineering Division

Subdivision and Encroachment Permit Fees Transmittal Form

To Applicant: RETAIN THIS FORM. IT MUST BE RETURNED FOR ANY REFUND

NAME OF REMITTOR: _____ DATE: _____

LOCATION OF JOB: _____

☐ Parcel Map	$ 4,820.00
☐ Lot Line Adjustment	1,743.00
☐ Tentative Map	5,453.00
☐ Minor Amendment to Approved Tentative Map	373.00
☐ Major Amendment to Approved Tentative Map	1,686.00
☐ Final Map filing fee	376.00
☐ Final Map unit based fee (per unit)	$181.00 X _____ (No. Units) =$ _____
☐ Certificate of Compliance	1,743.00
☐ Minor Encroachment Permit application fee	454.00
☐ Minor Encroachment final fee	1,228.00
☐ Major Encroachment Permit application fee	454.00
☐ Major Encroachment final fee	1,774.00
☐ Creek Permit	$ _____
☐ Other General Engineering fees (specify)……	$ _____

_____

TOTAL FEES ..... **$** _____

☐ Other Special Deposit (Map deposit – **separate check**) ..... $ _____

To Permit Specialist: All fees are to be entered into payment type 07 except, Other Special deposits, which are entered into OS. Note, these codes instead of BP. On the description line, please enter the property address and remitter's name. Return original receipt and copies of all checks as applicable along with original transmittal form to the AOSIII in Planning Administration, via daily cash receipts. A copy will be submitted to Engineer for posting in the file. See document entitled "Procedure for processing check and credit cards for fees and deposits for subdivision: for more detailed instructions.

For Office Use Only

THIS IS TO CERTIFY THAT _____ IS ENTITLED TO A REFUND

REFUND AMOUNT _____ RECEIPT# _____

ADDRESS TO FORWARD REFUND _____

APPROVED FOR REFUND BY _____ DATE _____

Planning a Safe and Sustainable Future for Berkeley
2120 Milvia Street, 1st Floor, Berkeley, CA 94704 Tel: 510.981-7500 TDD: 510.981-7474 Fax: 510.981-7505
E-mail: planning@ci.berkeley.ca.us