Appendix I

Energy Use Calculations

CALCULATIONS FOR GSR ENERGY USE IMPACTS
12/6/11

Project Impacts in 2018

WATER SUPPLY SOURCE	Average Daily Production (mgd)					
	GSR Project				Baseline	Change
	Put-year 32%	Take-year 23%	Hold-year 45%	weighted average		
Partner Agencies (PA)						
Groundwater wells	1.38	6.90	6.90	5.13	6.84	(1.71)
SFPUC						
Regional Water System (RWS)	5.52	(7.23)	-	0.10	-	0.10
GSR Groundwater wells	0.04	7.23	0.04	1.69	-	1.69
Total	**6.94**	**6.90**	**6.94**	**6.93**	**6.84**	**0.09**

WATER SUPPLY SOURCE	Average Annual Energy Consumption (kW-hrs) (rounded to nearest million kWh)					
	GSR Project				Baseline	Change
	Put-year 32%	Take-year 23%	Hold-year 45%	weighted average		
Partner Agencies (PA)						
Groundwater wells	3,000,000	16,000,000	16,000,000	12,000,000	16,000,000	(4,000,000)
SFPUC						
Regional Water System (RWS)	1,000,000	(1,000,000)	-	0	-	-
GSR Groundwater wells	0	17,000,000	0	4,000,000	-	4,000,000
Total	**4,000,000**	**32,000,000**	**16,000,000**	**16,000,000**	**16,000,000**	**-**
Percent Increase/Decrease						**0.0%**

Energy Data		*Units*	*Source of Data*
RWS Progam Environmental Impact Report (PEIR) Energy Consumption (2002)	44,000,000	kW-hr	PEIR (SF Planning Dept. 2008) was used because it was the base year used in the PEIR, and the only year with easily available energy use data for the Regional Water System
RWS Average Daily Production (2002)	275	Mgal/d	5/10/11 email from Antonia Sivyer per David Cameron
RWS Annual Water Production (2002)	100,375	Mgal	Average daily production X 365 days
RWS PEIR Unit-Energy Consumption (2002)	438	kW-hr/Mgal	2002 Energy consumption / 2002 Water Production
RWS Average Daily Production (2009)	219	Mgal/d	12/1/11 email from David Cameron (FY 2009 is 7/1/09 to 6/30/10)
RWS Baseline Energy Consumption (2009)	34,976,000	kW-hr	Average daily production x PEIR Unit-Energy Consumption x 365 days
RWS Average Daily Production (2018)	265	Mgal/d	Water System Improvement Proram (WSIP) Phased Variant from PEIR (SF Planning Dept. 2008)
RWS Future Energy Consumption (2030)	47,500,000	kW-hr	PEIR (SF Planning Dept. 2008)
RWS Average Daily Production (2030)	300	Mgal/d	PEIR (SF Planning Dept. 2008)
RWS Annual Water Production (2030)	109,500	Mgal	Average daily production X 365 days
RWS Future Unit-Energy Consumption (2030)	434	kW-hr/Mgal	2030 Energy consumption / 2030 Water Production
GSR Groundwater Energy Use (take year)	17,065,115	kW-hr	12-2-11 SFPUC GSR Groundwater Wells estimated KWh usage
GSR Groundwater Daily Production	7.23	Mgal/d	Project Description
GSR Groundwater Annual Water Production	2,639	Mgal	Average daily production X 365 days
GSR Unit-Energy Consumption	6,467	kW-hr/Mgal	GSR Energy consumption / GSR Water Production
GSR Groundwater Energy Use (put and hold year)	373,827	kW-hr	12-2-11 SFPUC GSR Groundwater Wells estimated KWh usage
PA Groundwater Unit-Energy Consumption	6,467	kW-hr/Mgal	Estimated to be the same as GSR
% of Put years in hydro sequence	32%		Table 10.1-9 in Kennedy/Jenks TM 10.1 Groundwater Modeling Analysis 2012
% of Take years in hydro sequence	23%		Table 10.1-9 in Kennedy/Jenks TM 10.1 Groundwater Modeling Analysis 2012
% of Hold years in hydro sequence	45%		Table 10.1-9 in Kennedy/Jenks TM 10.1 Groundwater Modeling Analysis 2012
	100%		