

9210-200
Reference booklet

Q 9 Table – Power Production from Renewable Energy Sources

(Quadrillion BTU units – USA)

Part A: Total (production) as a linear function of Wind, Hydro, Geothermal, Biomass & Solar (production)

Regression

2010	11	8.05	2.51	0.21	3.91	0.11	0.92
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Model Summary ^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.981 ^a	.962	.923	.23178

a. Predictors: (Constant), Wind, Hydro, Geothermal, Biomass, Solar

b. Dependent Variable: Total

ANOVA (b)

a Predictors: (Constant), Wind, Hydro, Geothermal, Biomass, Solar

b Dependent Variable: Total

Coefficients (a)

a Dependent Variable: Total

Model	Unconstrained Coefficients		Constrained Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	.083	4.563		.018	.986
Hydro	.820	.490	.185	1.672	.155
Geothermal	4.803	20.085	.088	.239	.820
Biomass	1.173	.559	.764	2.098	.090
Solar	-9.702	24.979	-.203	-.388	.714
Wind	.970	2.031	.337	.478	.653

a Dependent Variable: Total

Residuals Statistics (a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.1506	8.0203	6.5400	.81973	11
Residual	-.17428	.44181	.00000	.16389	11
Std. Predicted Value	-1.695	1.806	.000	1.000	11
Std. Residual	-.752	1.906	.000	.707	11

a Dependent Variable: Total

Part B: Total (production) as a linear function of Hydro, Biomass (productions)

Regression

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.975 ^a	.950	.937	.20962

a. Predictors: (Constant), Biomass, Hydro

b. Dependent Variable: Total

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.637	2	3.318	75.517	.000 ^a
	Residual	.352	8	.044		
	Total	6.988	10			

a. Predictors: (Constant), Biomass, Hydro

b. Dependent Variable: Total

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.843	1.074		-.785	.455
	Hydro	.921	.355	.208	2.595	.032
	Biomass	1.511	.123	.984	12.265	.000

a. Dependent Variable: Total

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.1777	7.9642	6.5400	.81466	11
Residual	-.18181	.49870	.00000	.18749	11
Std. Predicted Value	-1.672	1.748	.000	1.000	11
Std. Residual	-.867	2.379	.000	.894	11

a. Dependent Variable: Total

Part C: Hydro (production) as a linear function of Year Number

Coefficients (a)

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.683	.127		21.052	.000
	Year Number	-.008	.019	-.144	-.435	.673

a Dependent Variable: Hydro

Part D: Biomass (production)n as a linear function of Year Number

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.373	.142		16.667	.000
	YearNumber	.152	.021	.923	7.220	.000

a. Dependent Variable: Biomass

Year	Year Number	Total	Hydro	Geo thermal	Bio mass	Solar	Wind
2000	1	6.11	2.81	0.16	3.01	0.07	0.06
2001	2	5.16	2.24	0.16	2.62	0.07	0.07
2002	3	5.73	2.69	0.17	2.70	0.06	0.11
2003	4	5.98	2.83	0.18	2.81	0.06	0.12
2004	5	6.68	2.69	0.18	3.01	0.06	0.14
2005	6	6.24	2.70	0.18	3.12	0.06	0.18
2006	7	6.66	2.87	0.18	3.28	0.07	0.26
2007	8	6.55	2.45	0.19	3.50	0.08	0.34
2008	9	7.19	2.51	0.21	3.85	0.09	0.55
2009	10	7.59	2.67	0.20	3.90	0.10	0.72