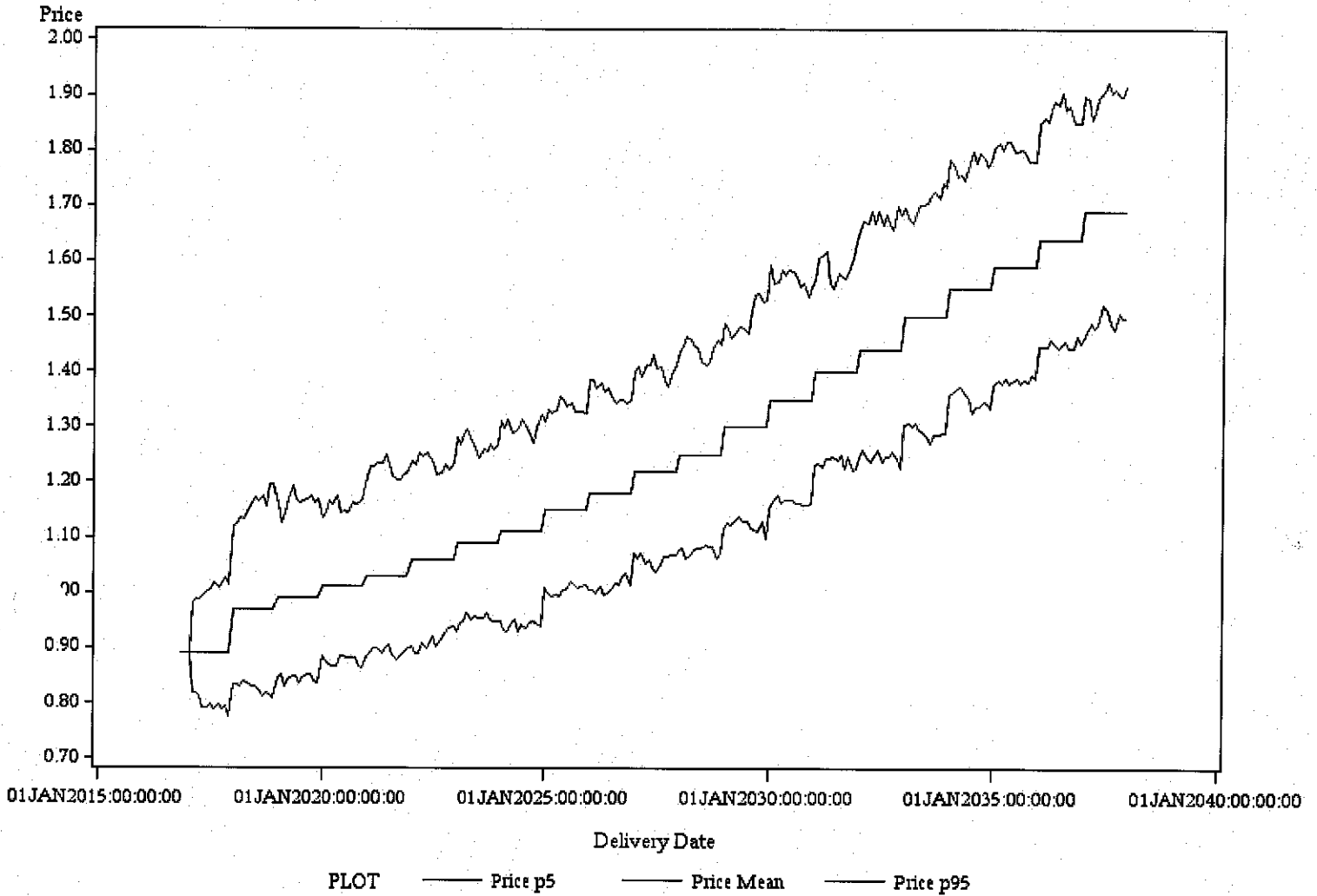


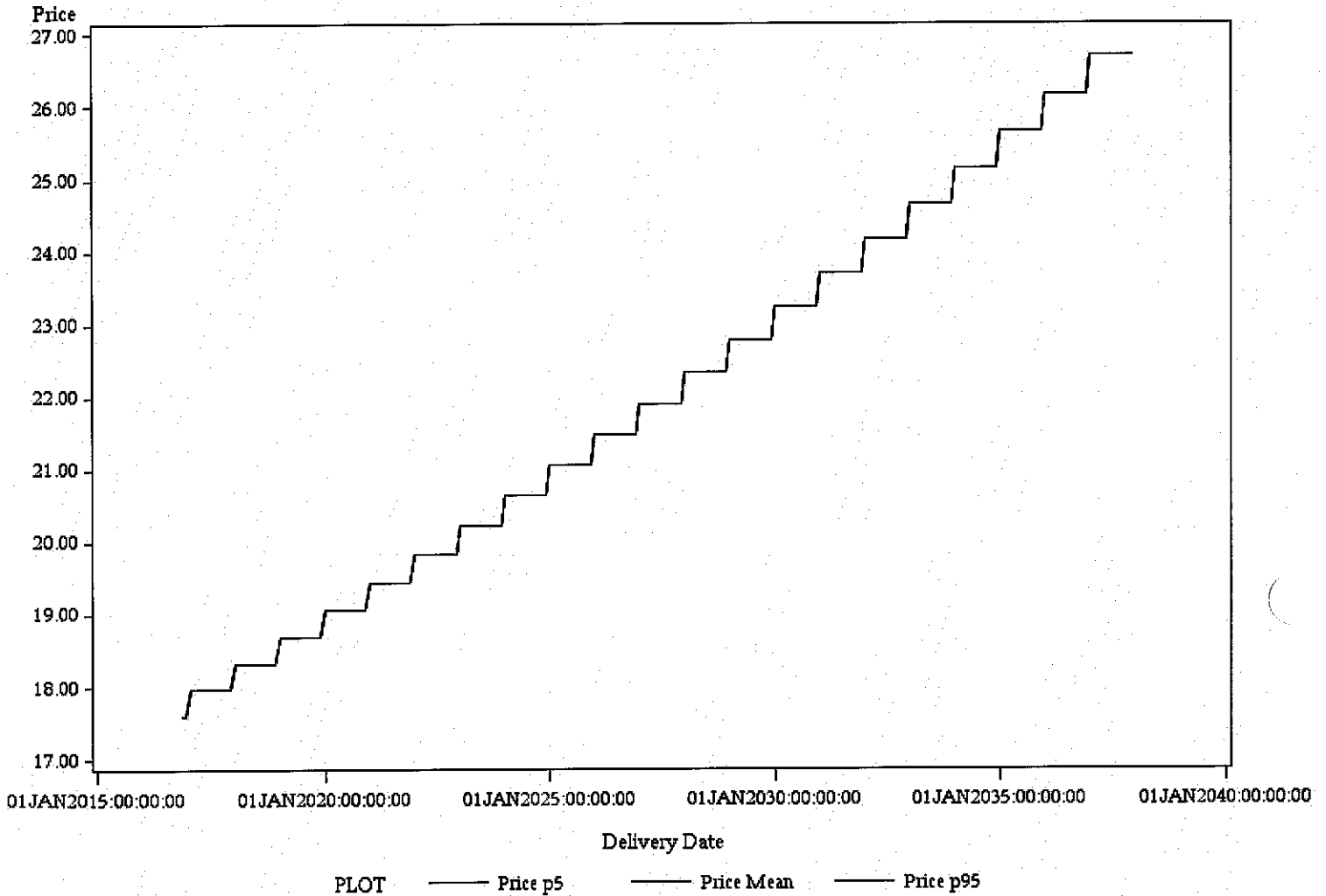
Confidence Intervals for Final Evolved Forward Curve Simulation

PRB - SD 8400



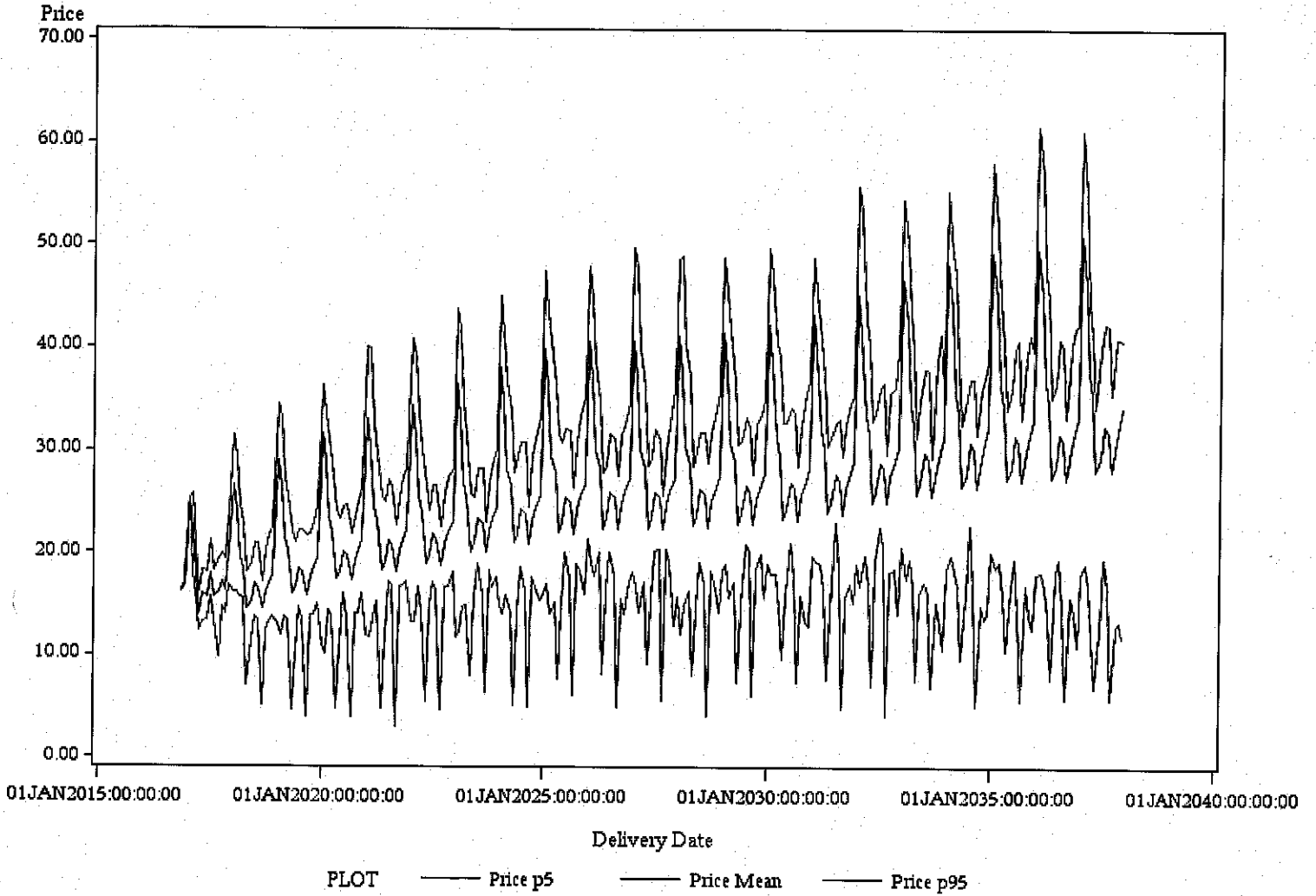
Confidence Intervals for Final Evolved Forward Curve Simulation

Oil2 - SD

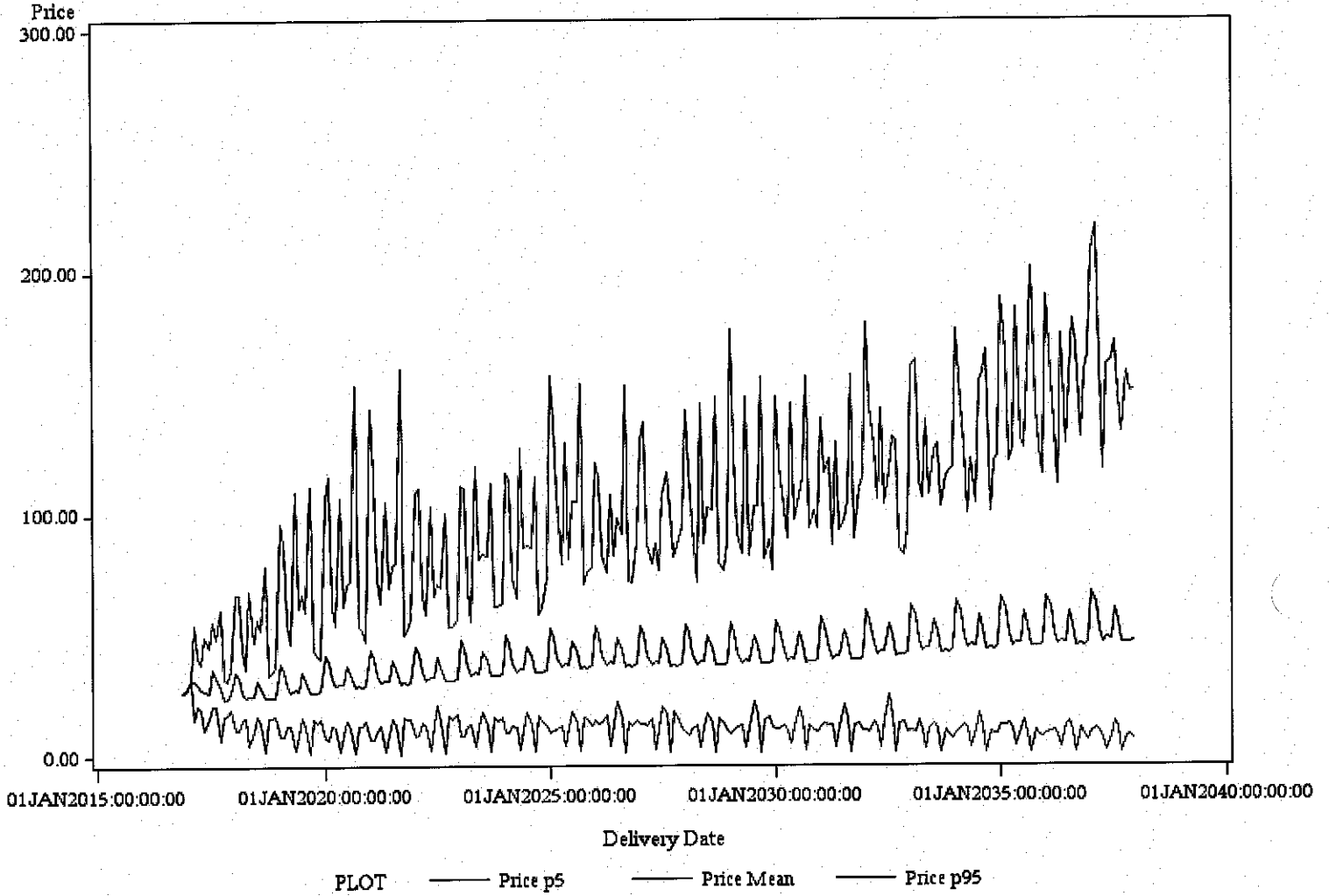


Confidence Intervals for Final Evolved Forward Curve Simulation

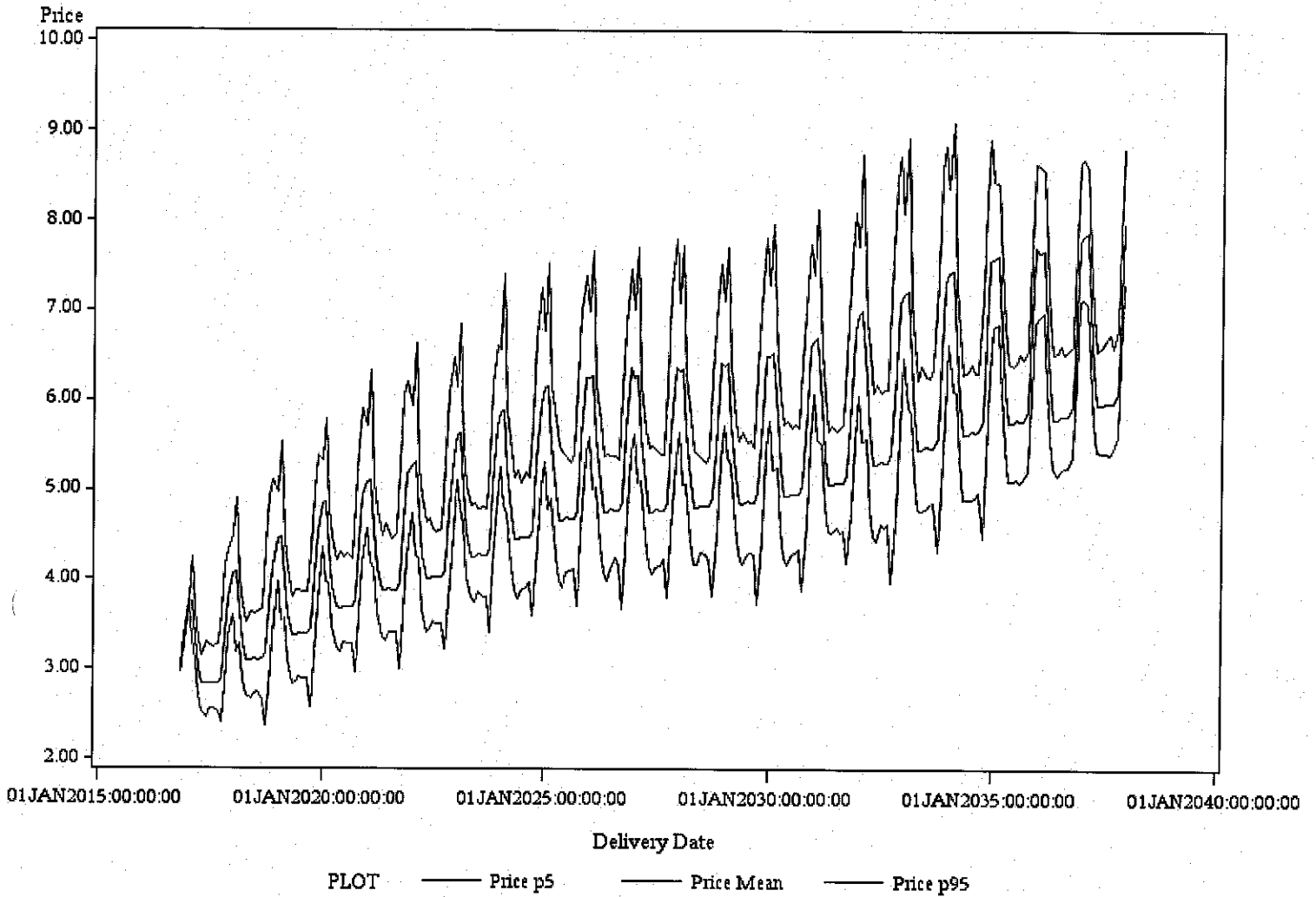
SPP_OFF



Confidence Intervals for Final Evolved Forward Curve Simulation SPP_ON

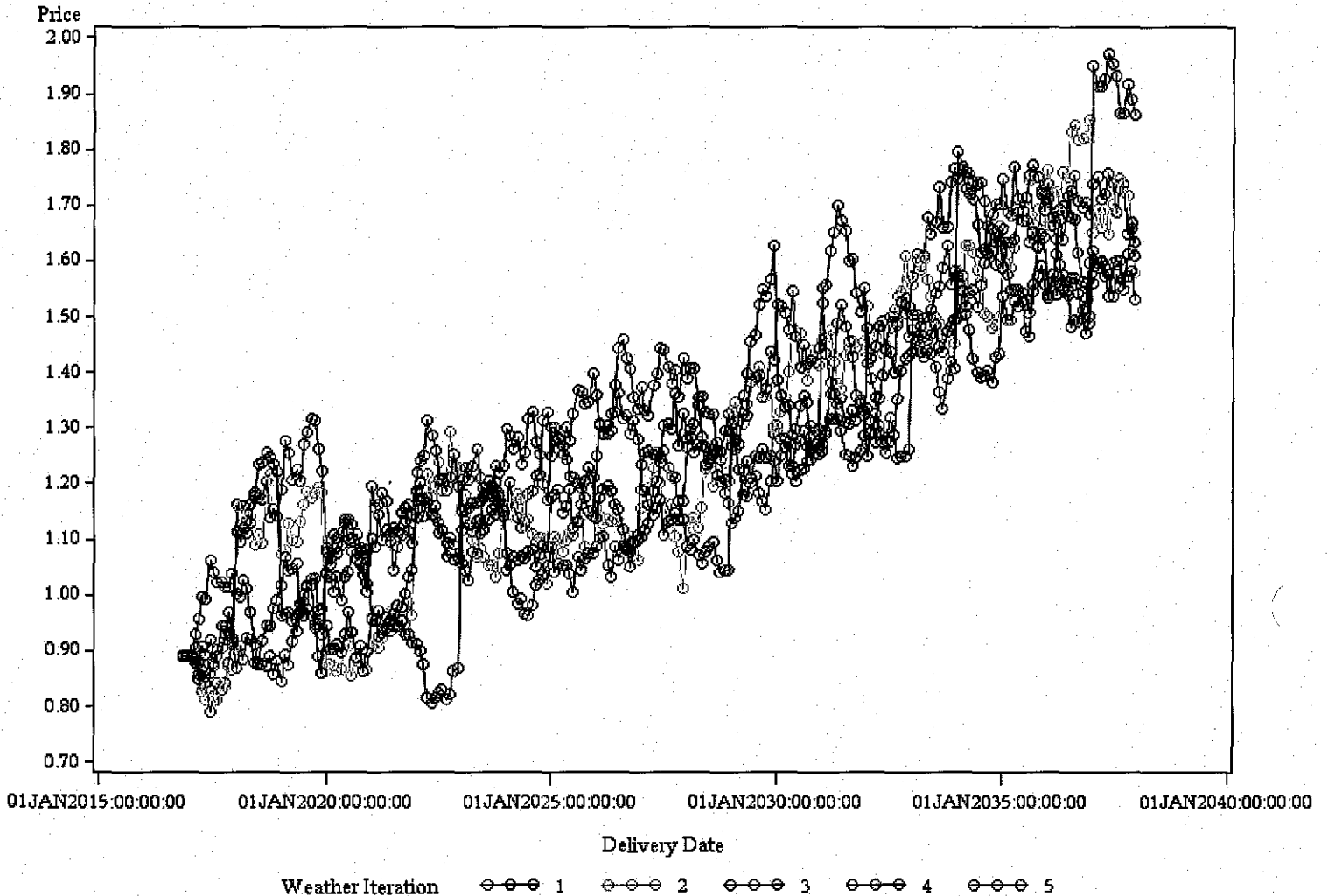


Confidence Intervals for Final Evolved Forward Curve Simulation Ventura AECO

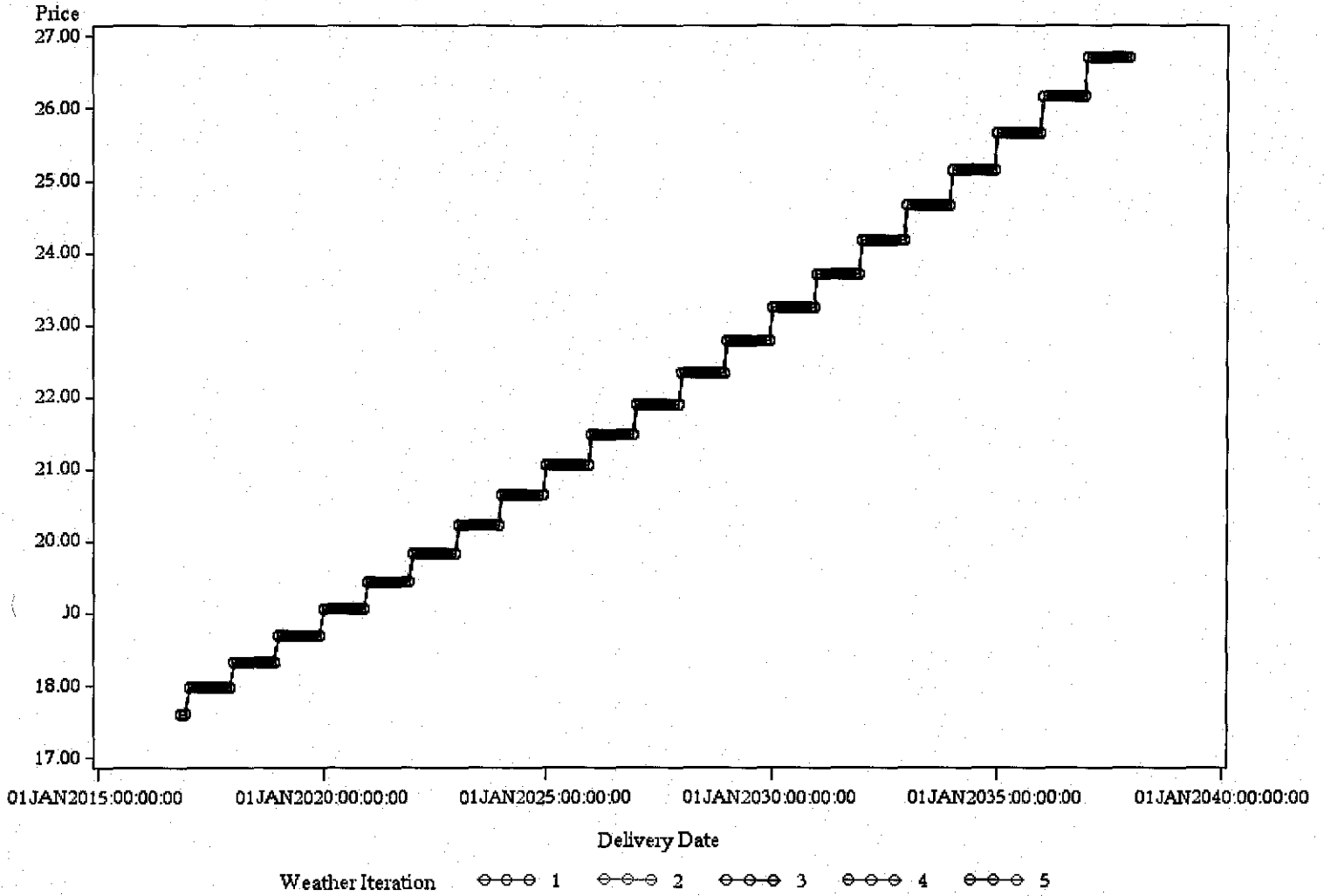


Price Paths for Final Evolved Forward Curve Simulation

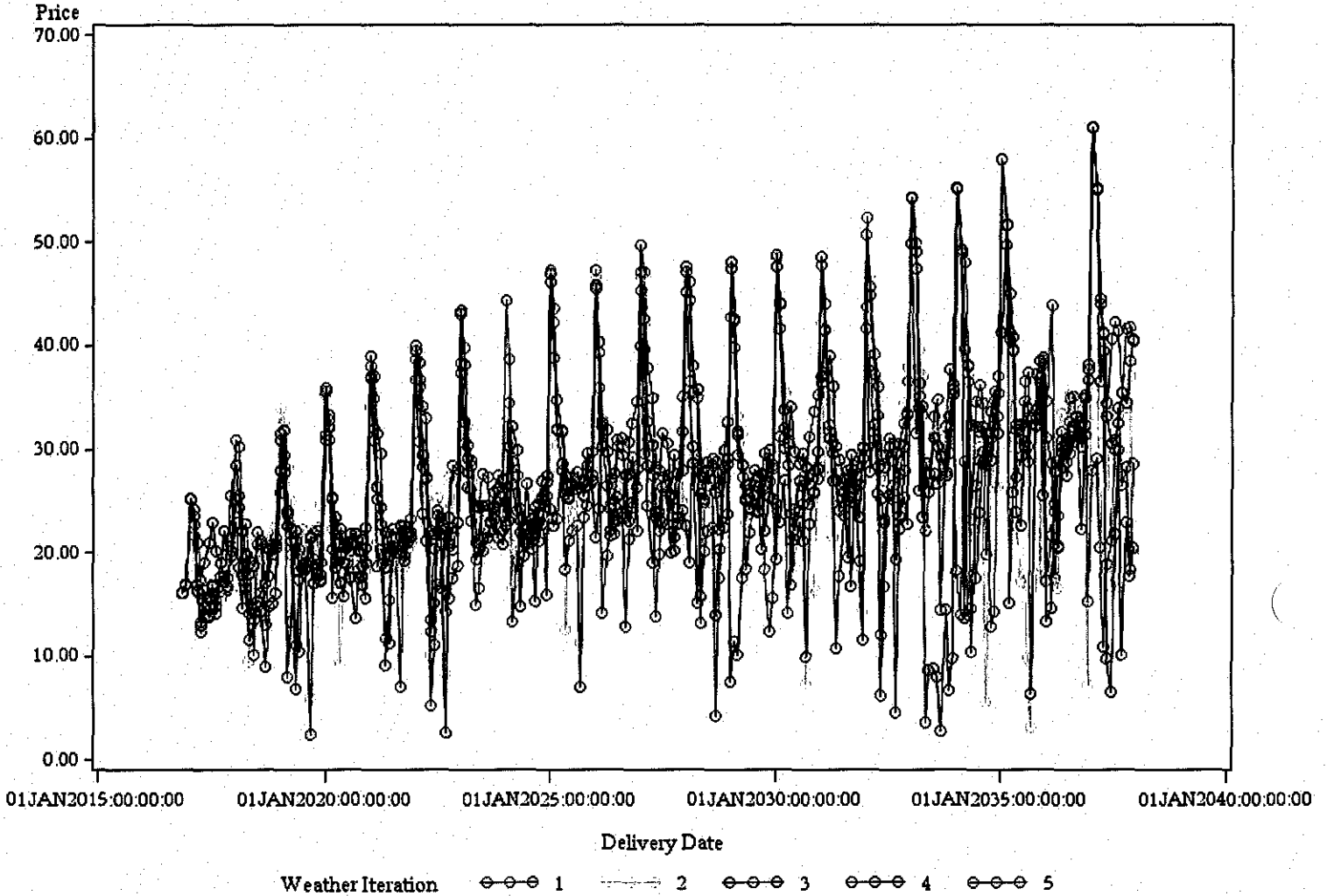
PRB - SD 8400



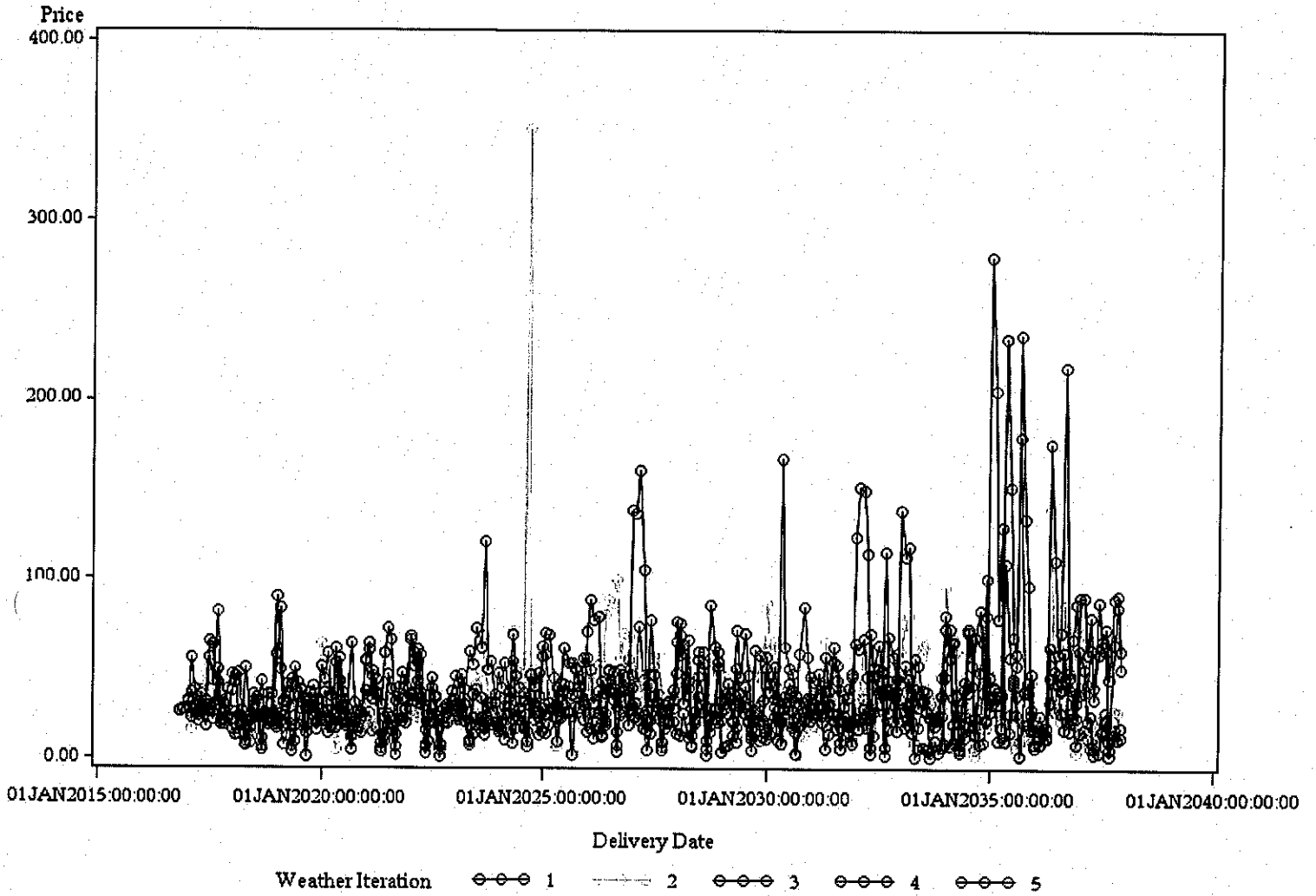
Price Paths for Final Evolved Forward Curve Simulation Oil2 - SD



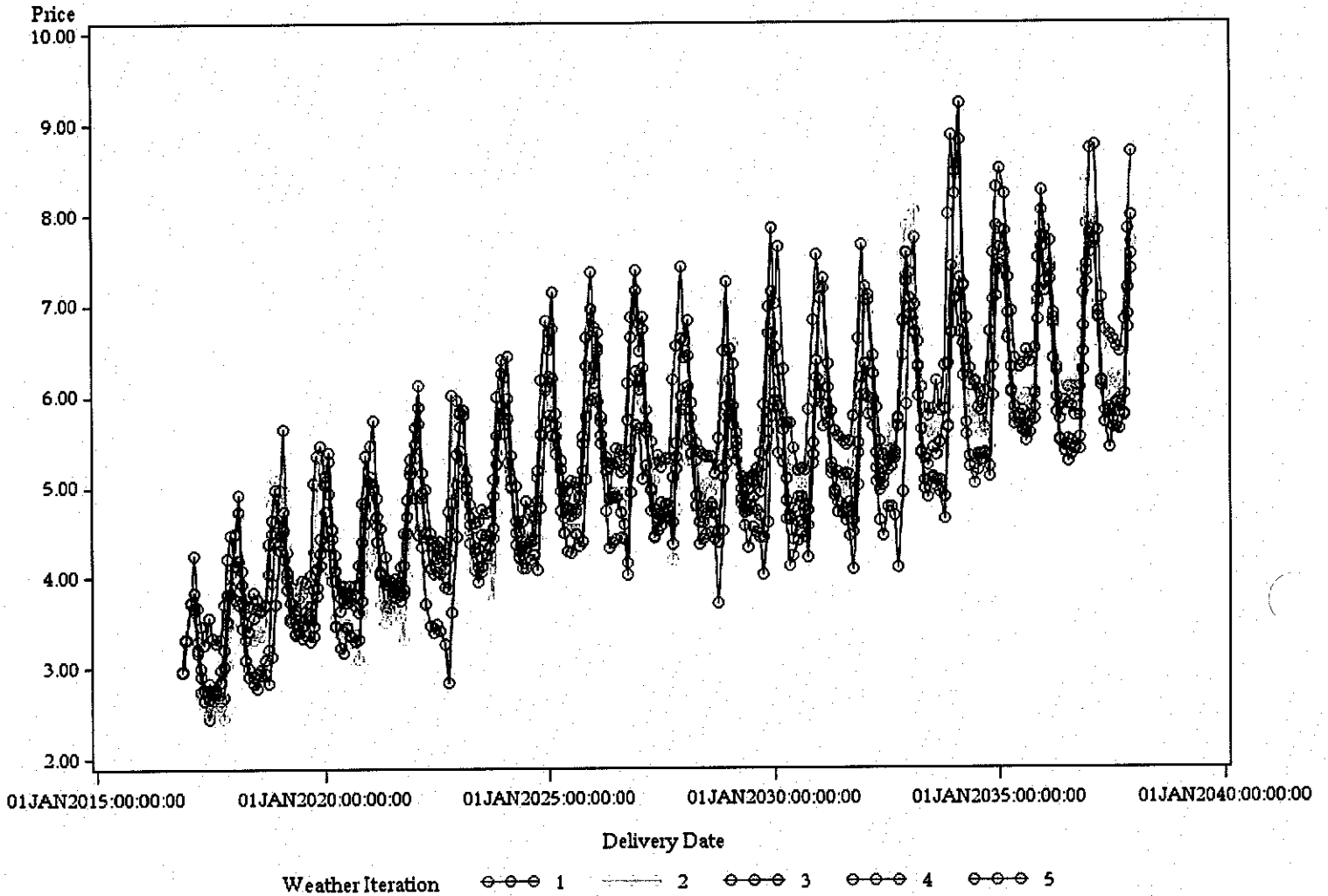
Price Paths for Final Evolved Forward Curve Simulation SPP_OFF



Price Paths for Final Evolved Forward Curve Simulation SPP_ON

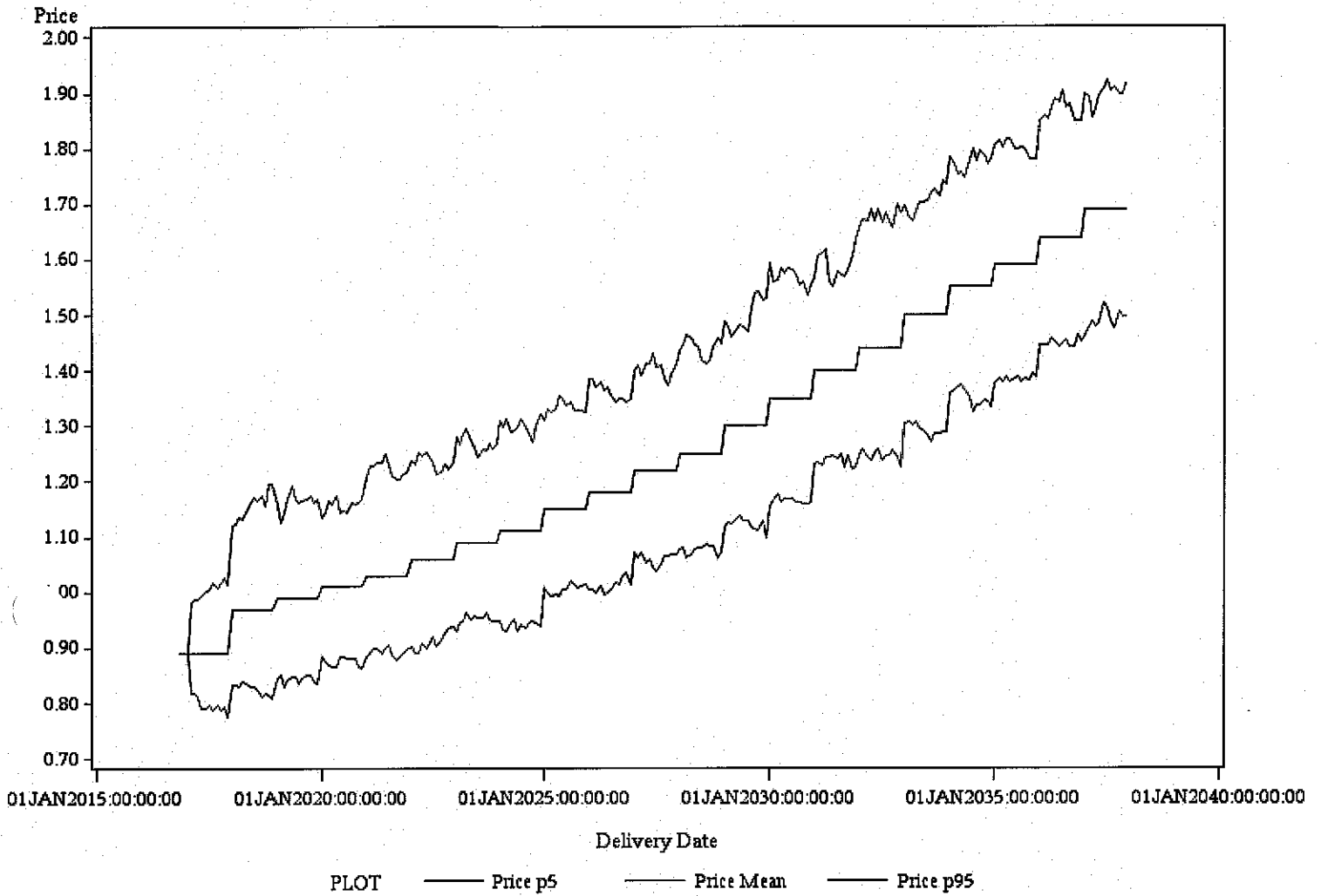


Price Paths for Final Evolved Forward Curve Simulation Ventura AECO



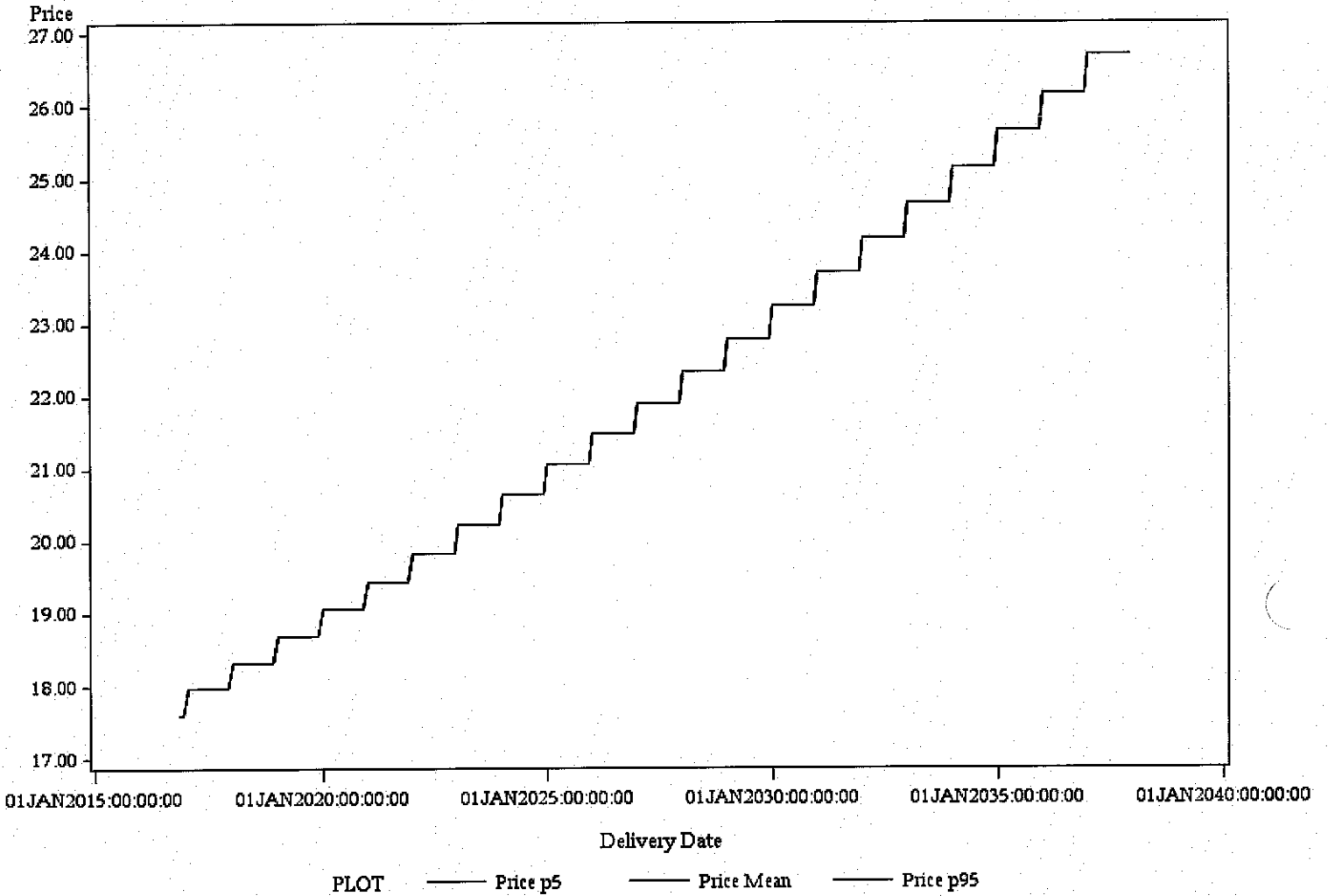
Confidence Intervals for Final Evolved Forward Curve Simulation

PRB - SD 8400

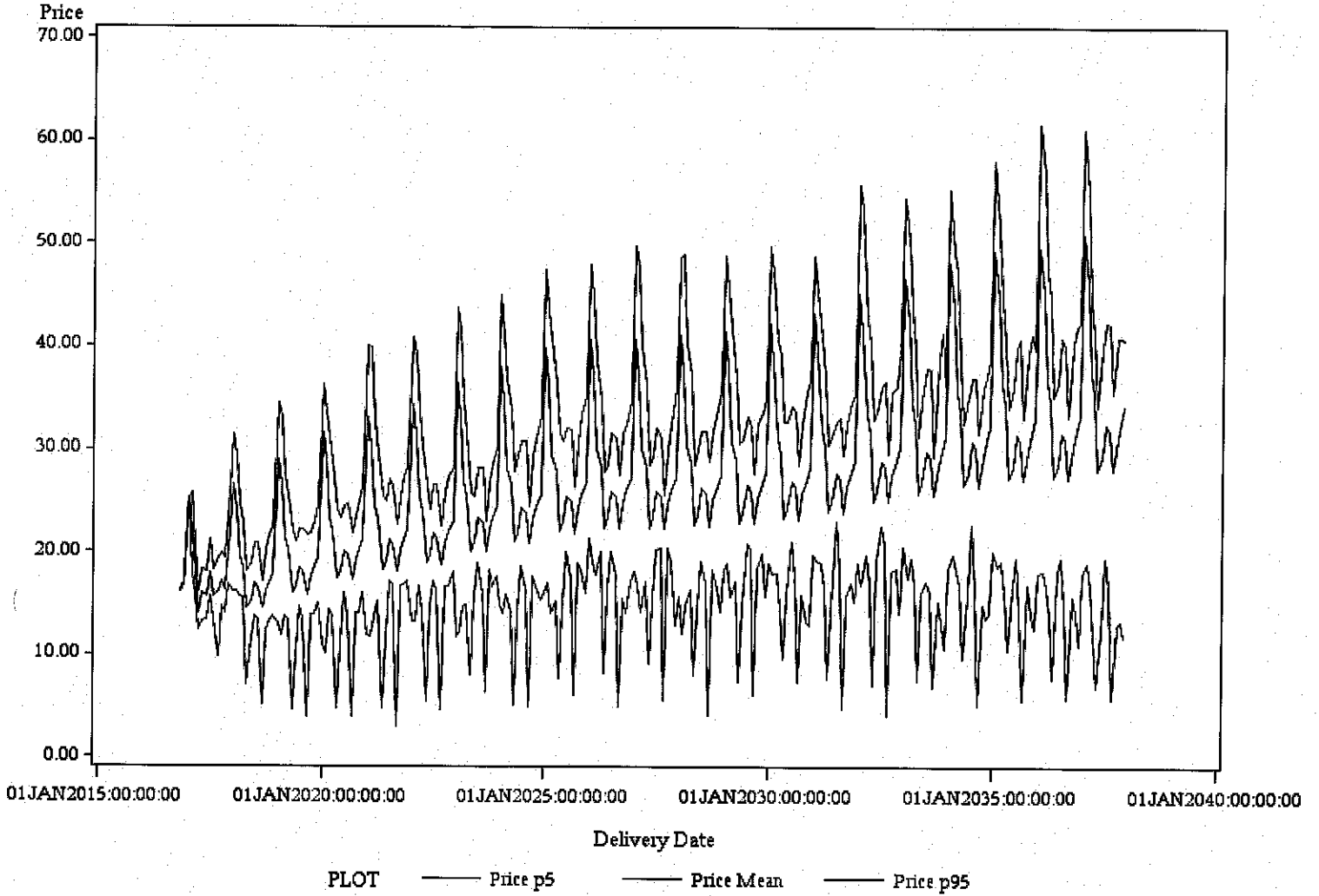


Confidence Intervals for Final Evolved Forward Curve Simulation

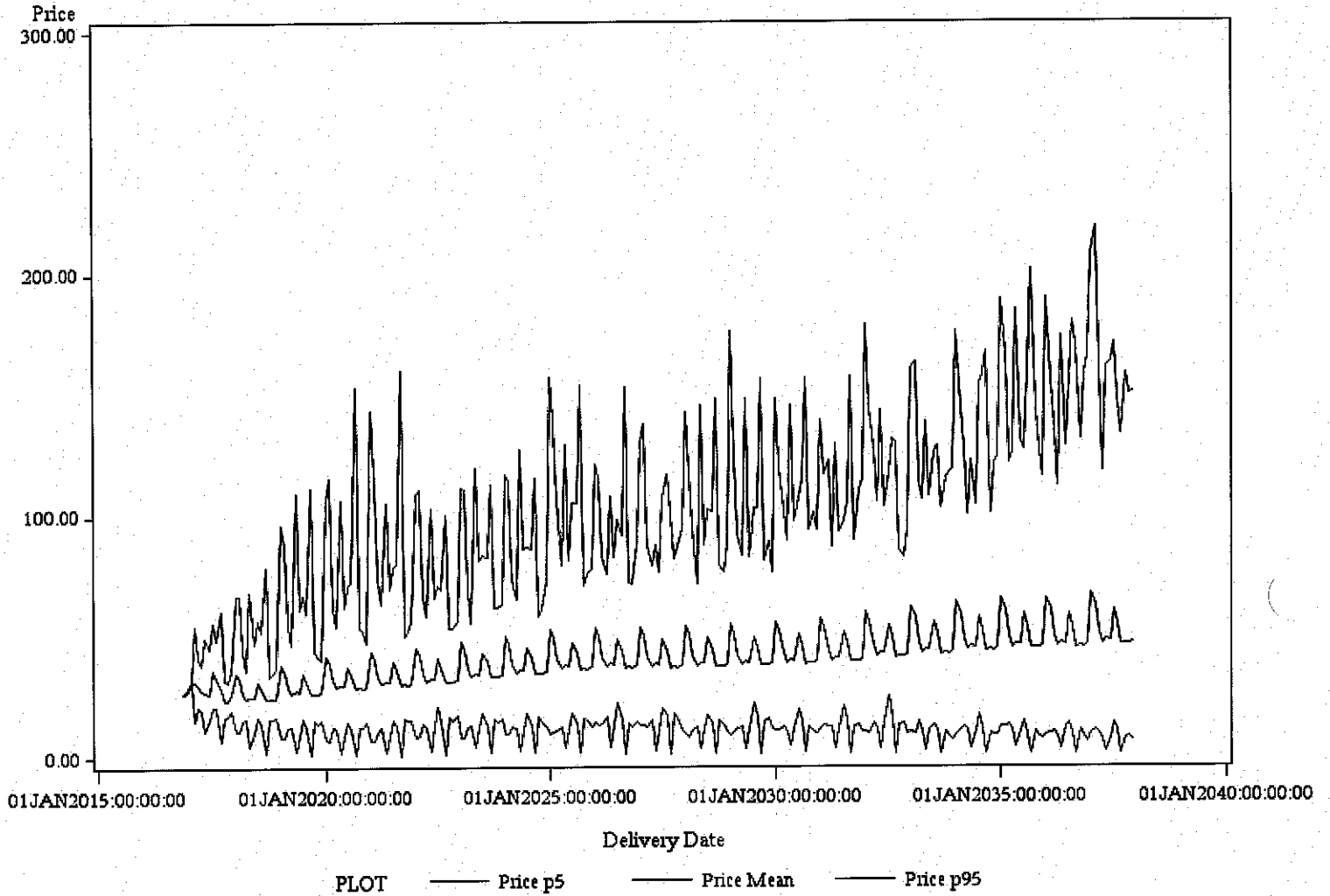
Oil2 - SD



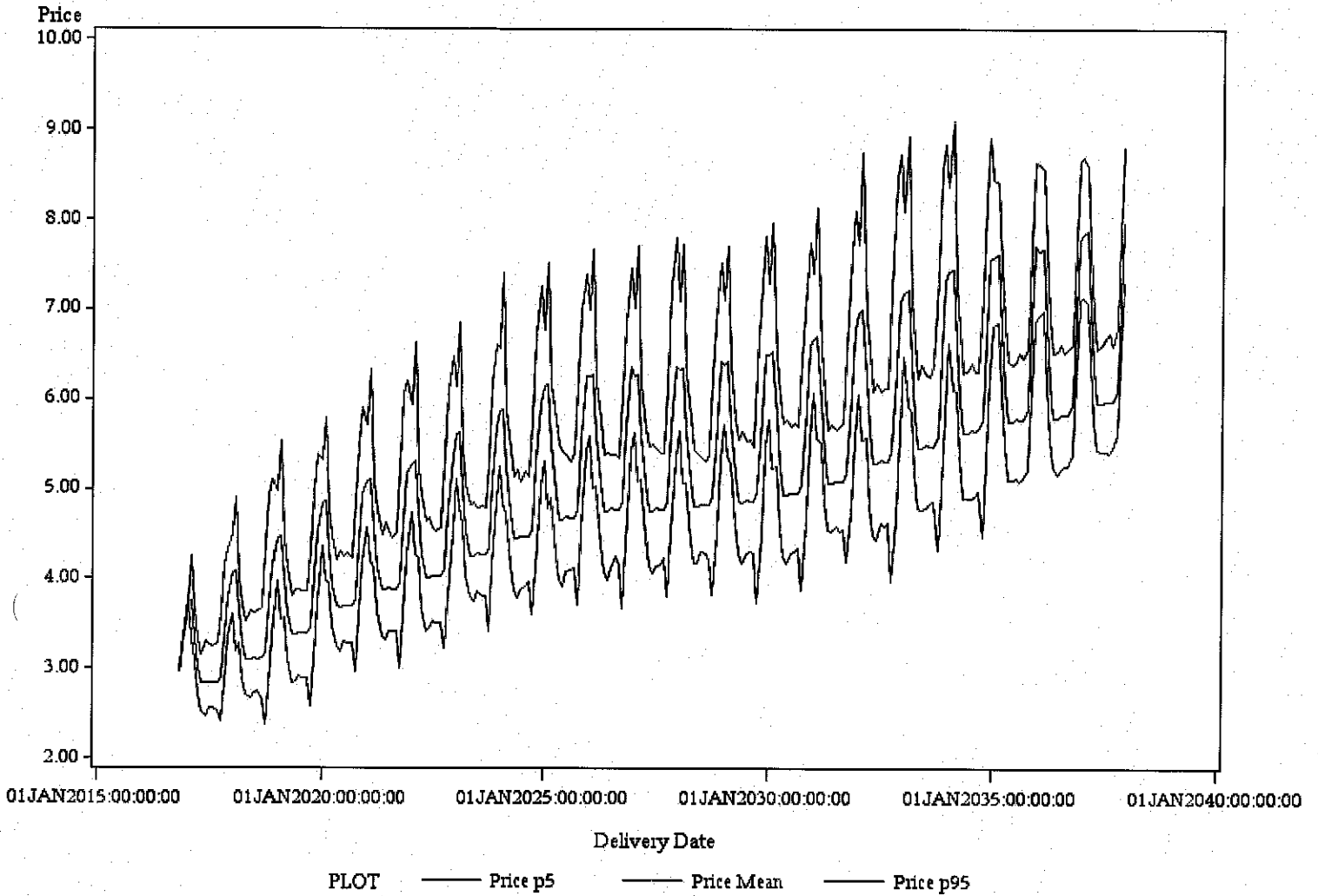
Confidence Intervals for Final Evolved Forward Curve Simulation SPP_OFF



Confidence Intervals for Final Evolved Forward Curve Simulation SPP_ON

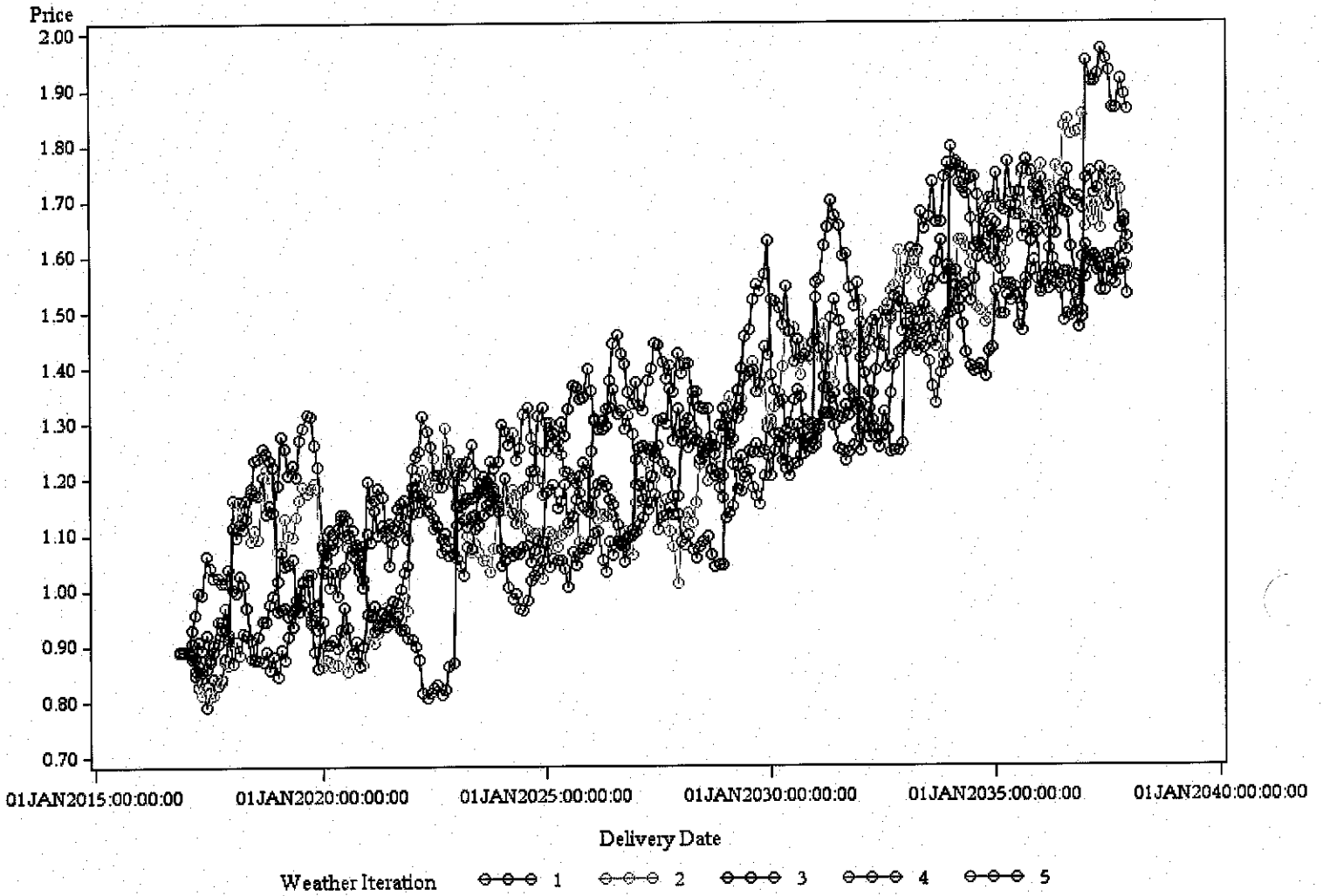


Confidence Intervals for Final Evolved Forward Curve Simulation Ventura AECO

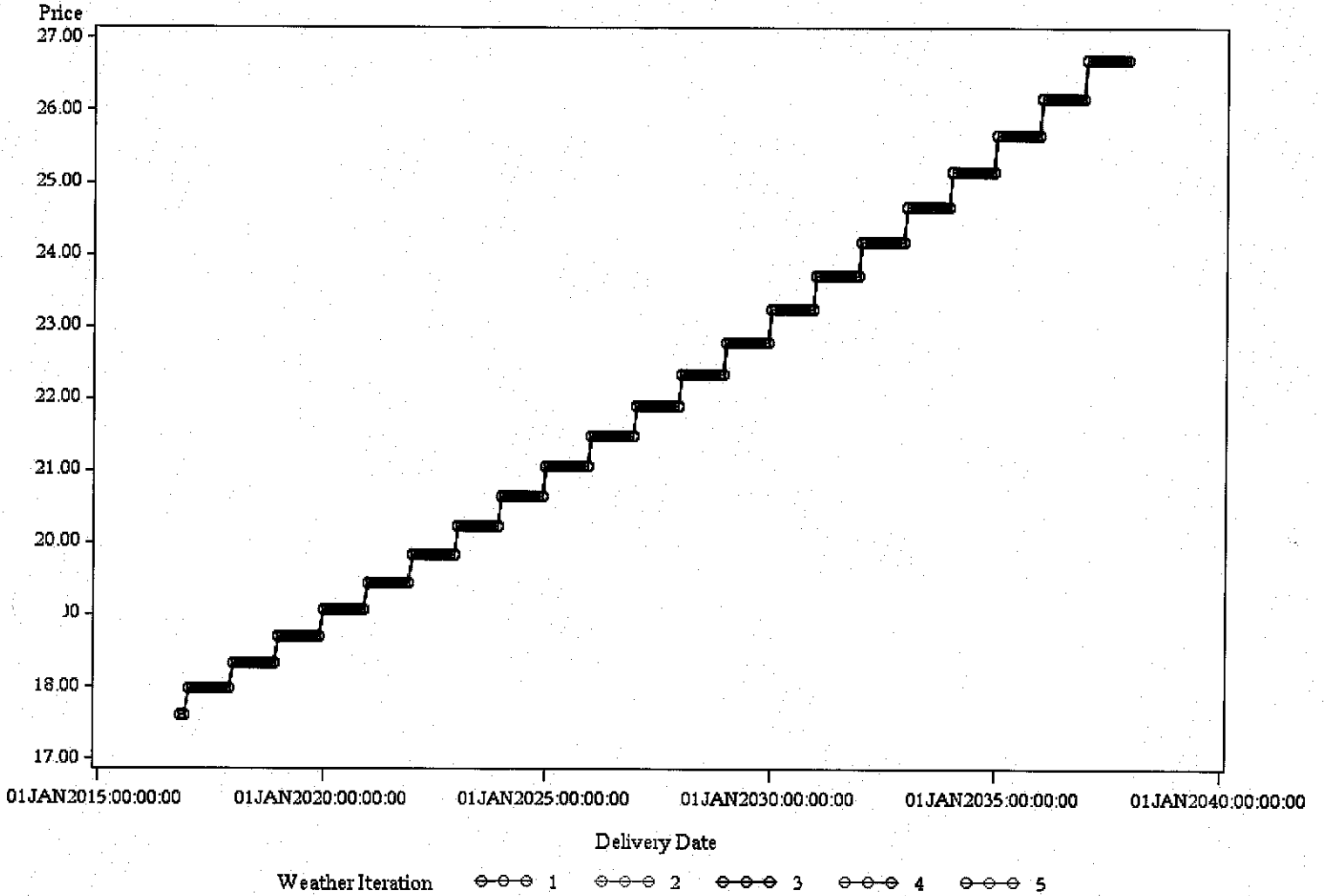


Price Paths for Final Evolved Forward Curve Simulation

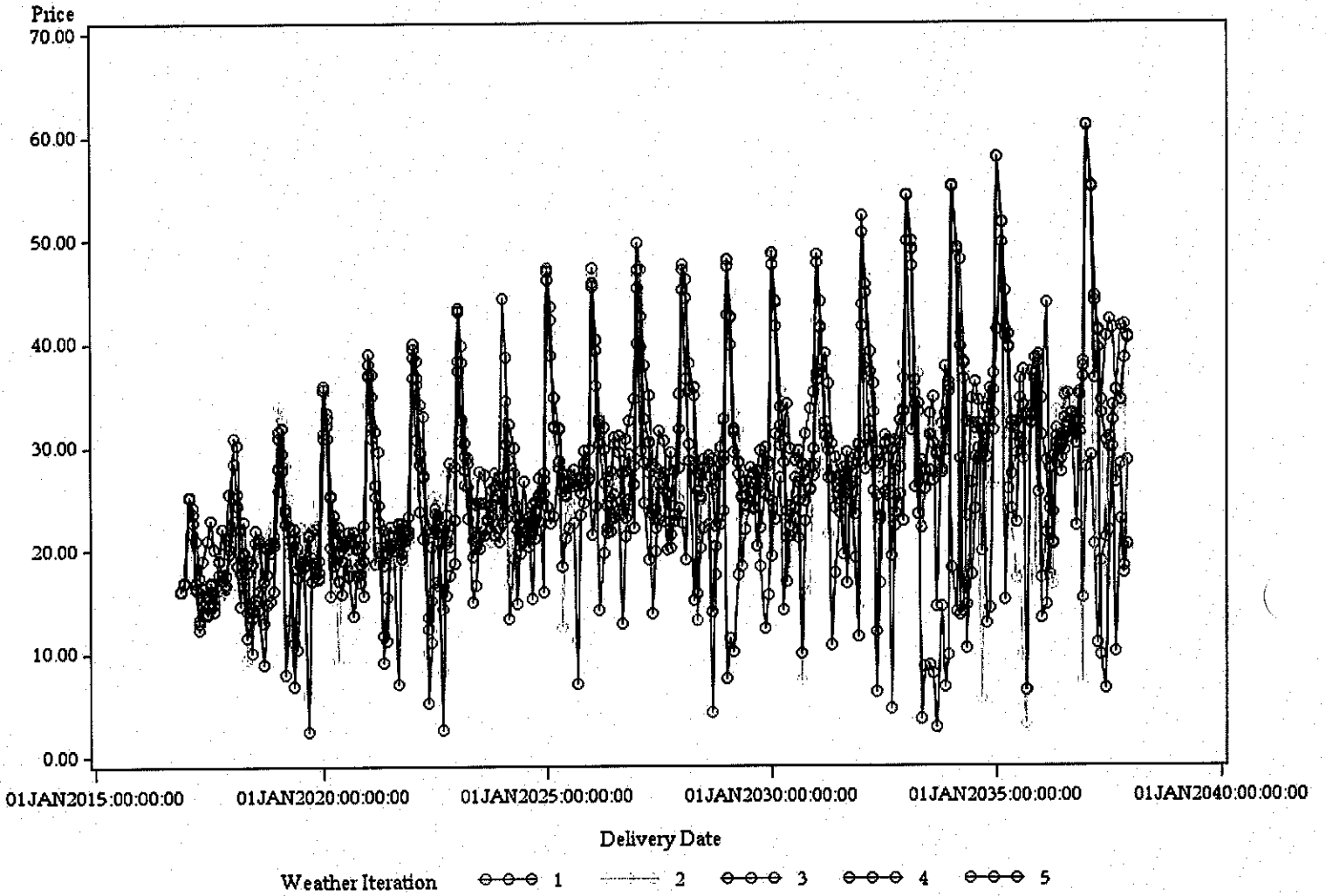
PRB - SD 8400



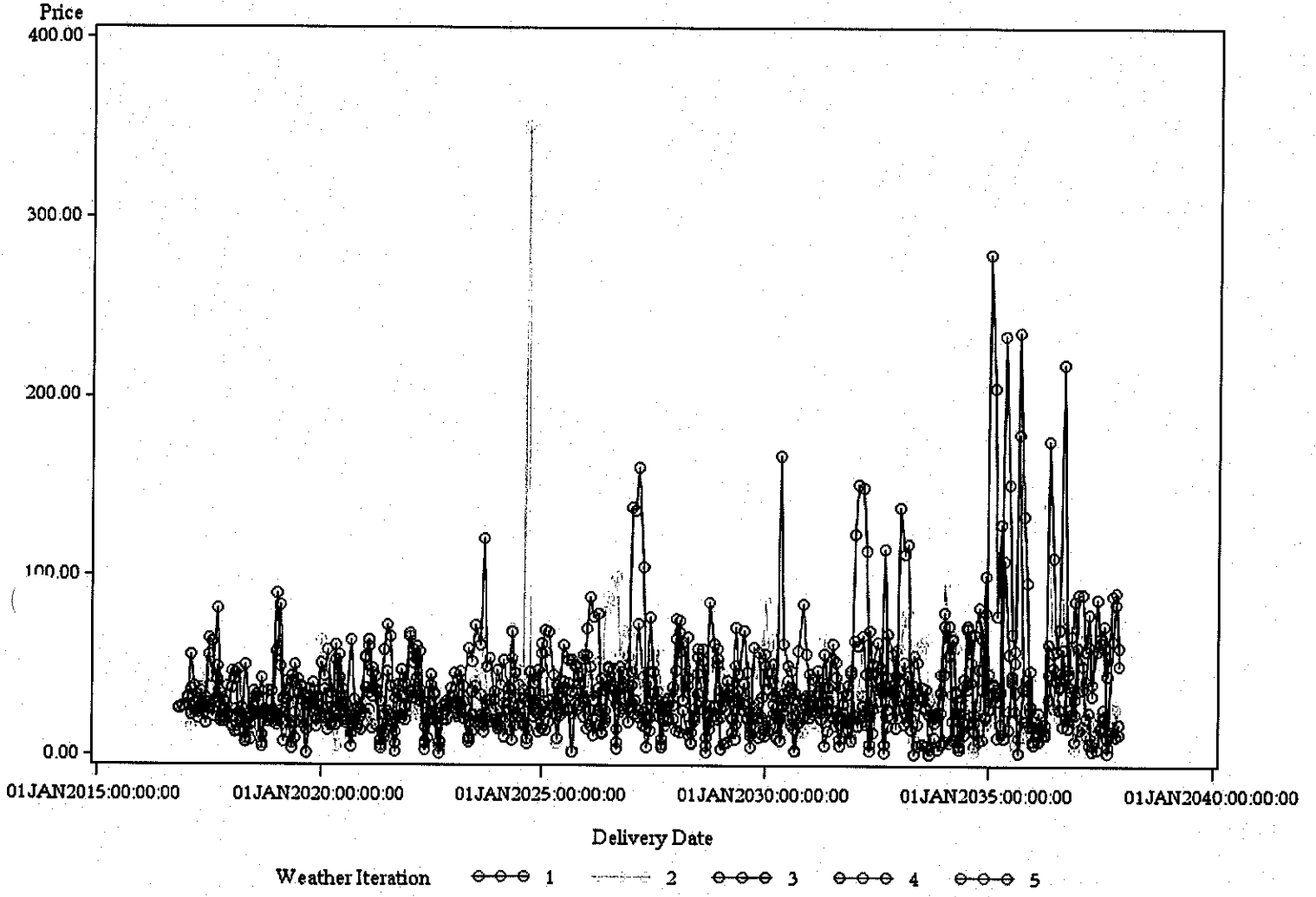
Price Paths for Final Evolved Forward Curve Simulation Oil2 - SD



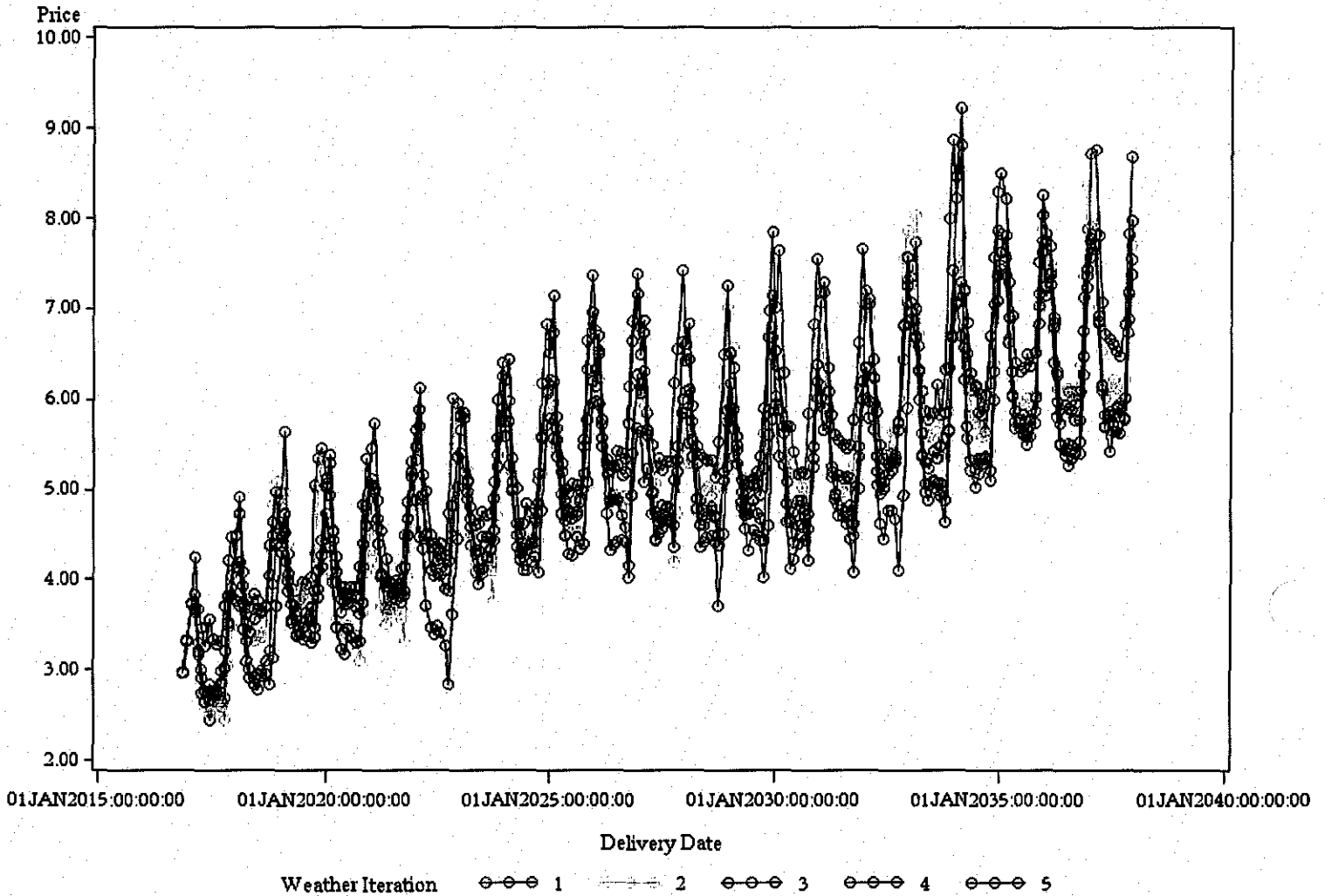
Price Paths for Final Evolved Forward Curve Simulation SPP_OFF



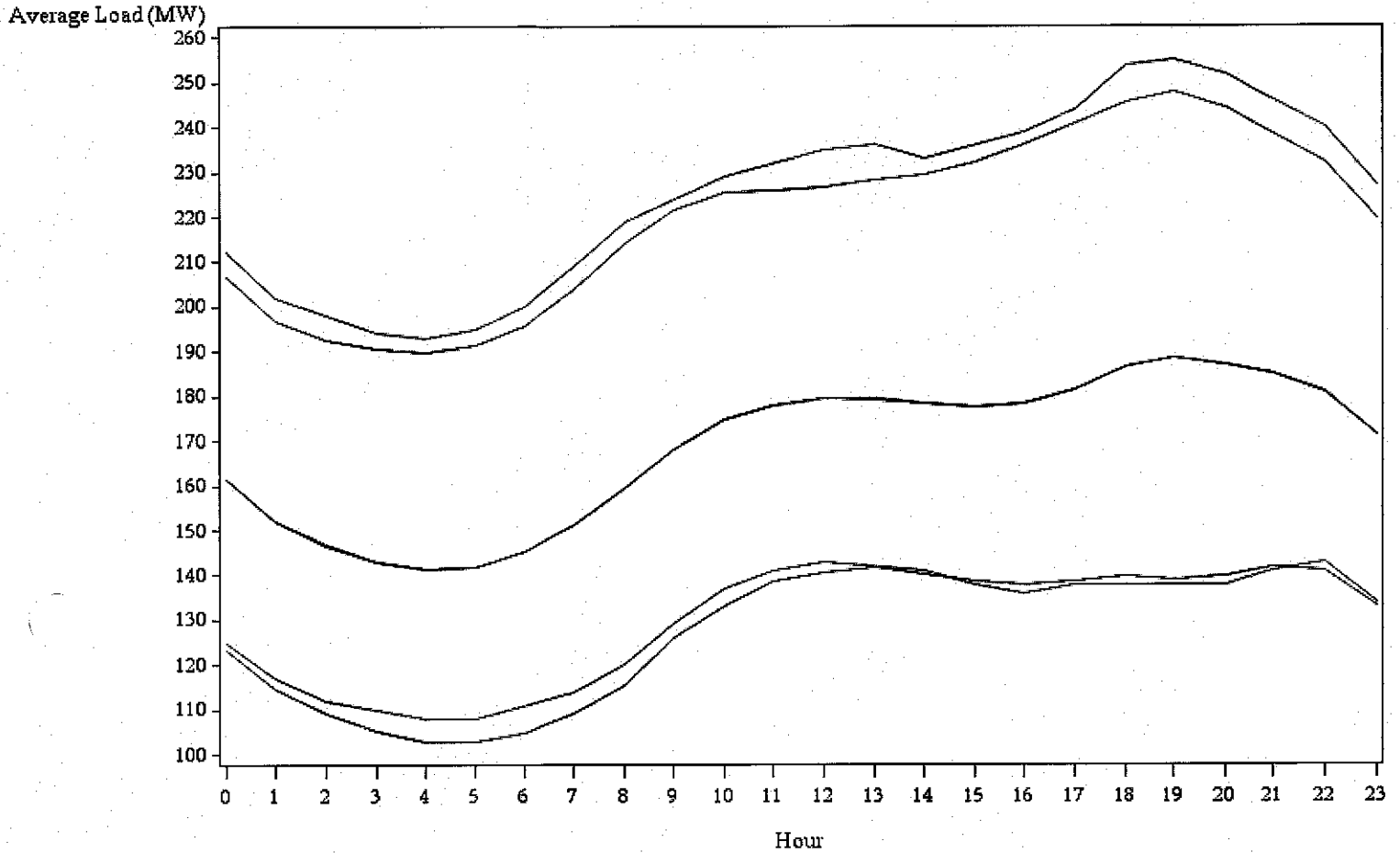
Price Paths for Final Evolved Forward Curve Simulation SPP_ON



Price Paths for Final Evolved Forward Curve Simulation Ventura AECO



Actual vs. Simulated Average Load by Hour of Day
Weekends
South Dakota Load - 2016

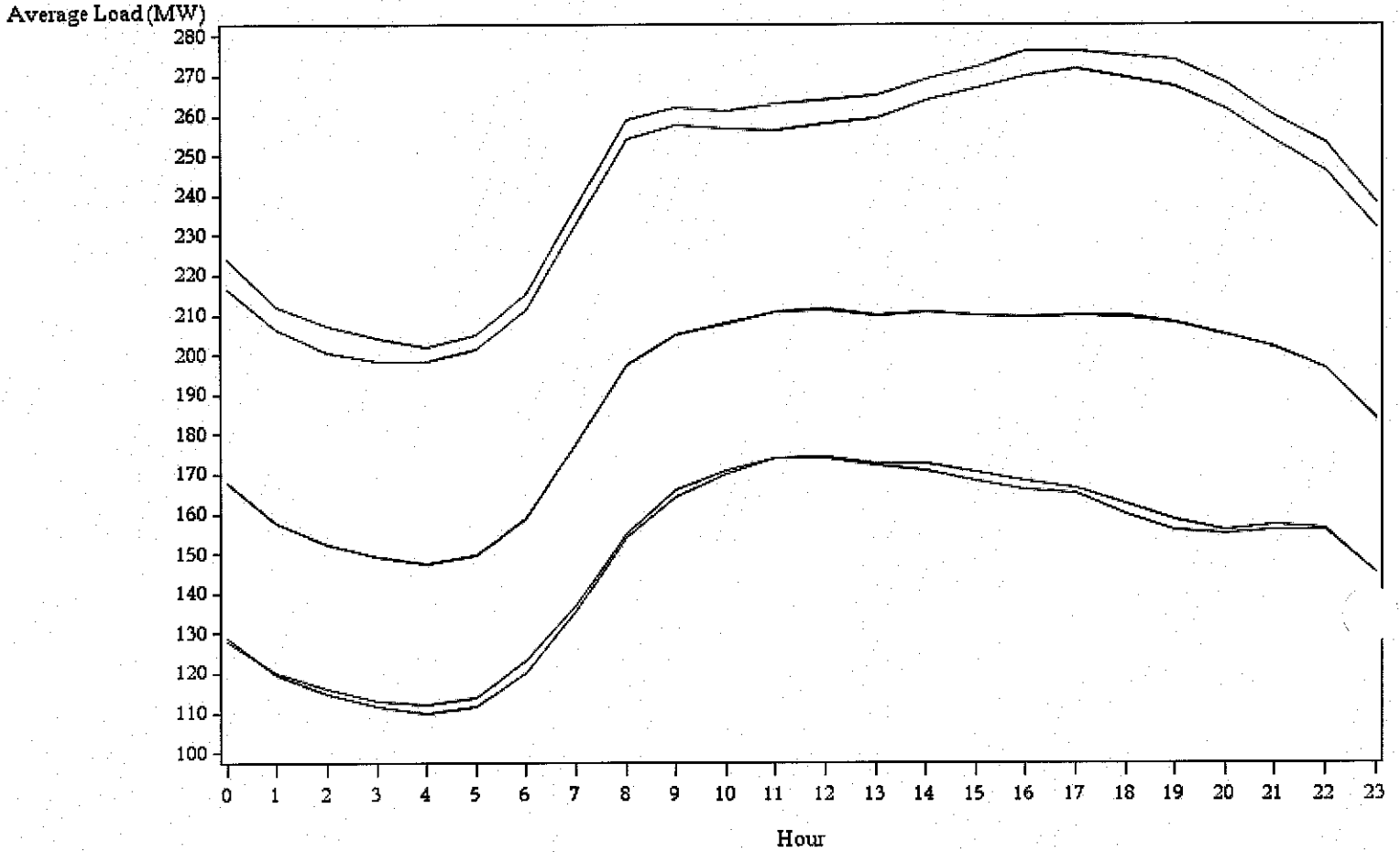


PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour of Day

Weekdays

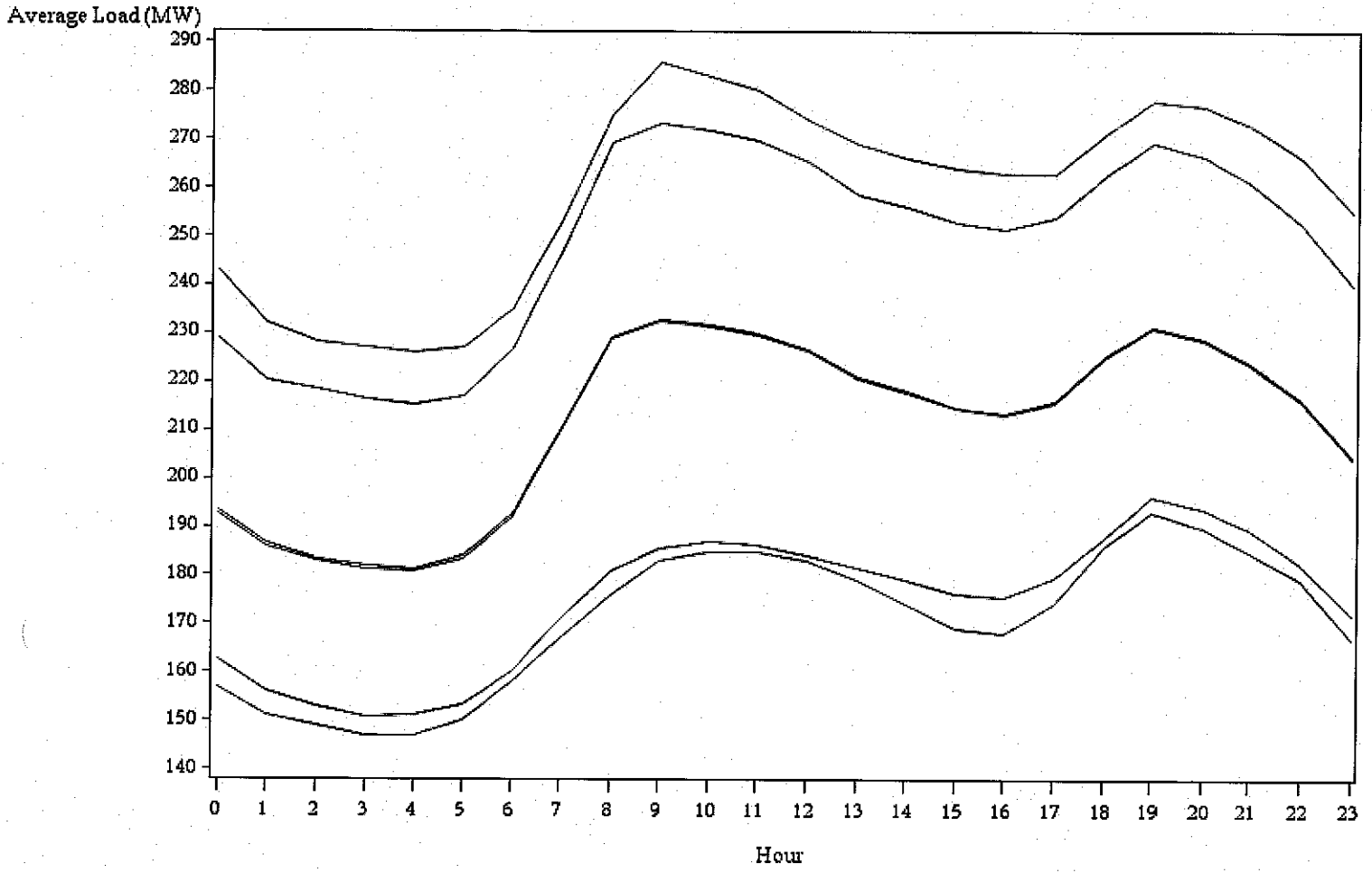
South Dakota Load - 2016



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

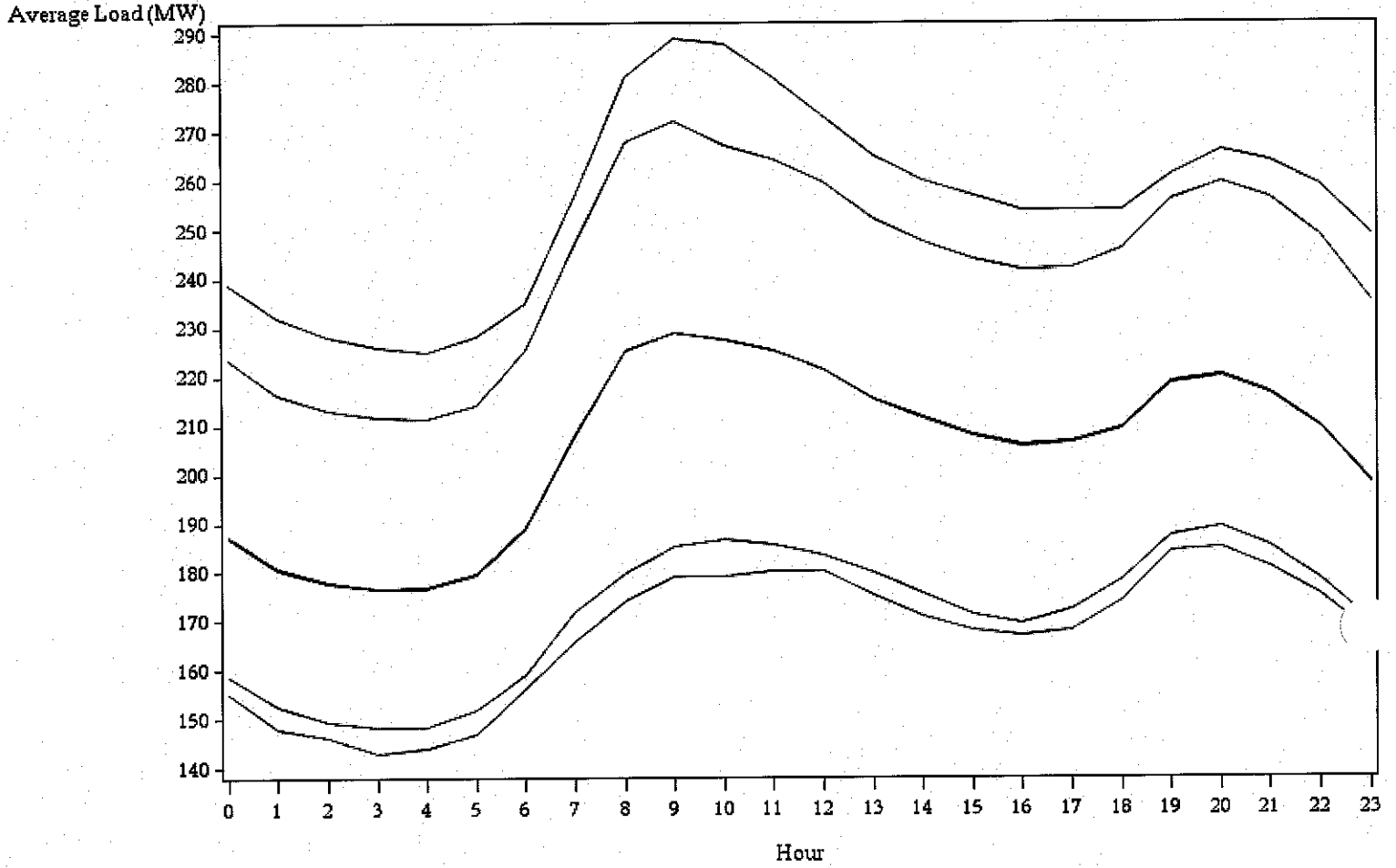
Actual vs. Simulated Average Load by Hour by Month

Load: South Dakota Load - 2016 Month: 1



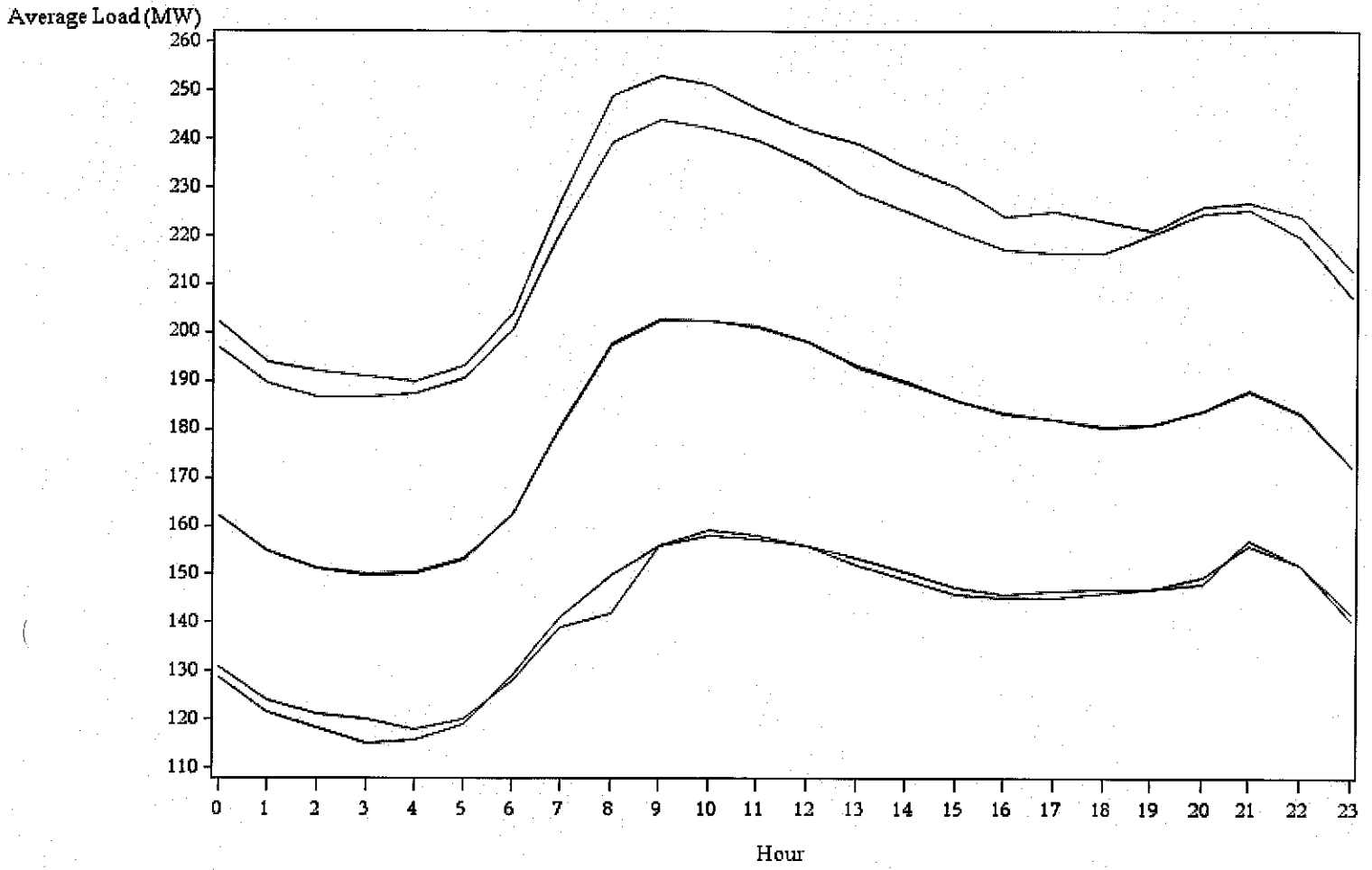
PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month
Load: South Dakota Load - 2016 Month: 2



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

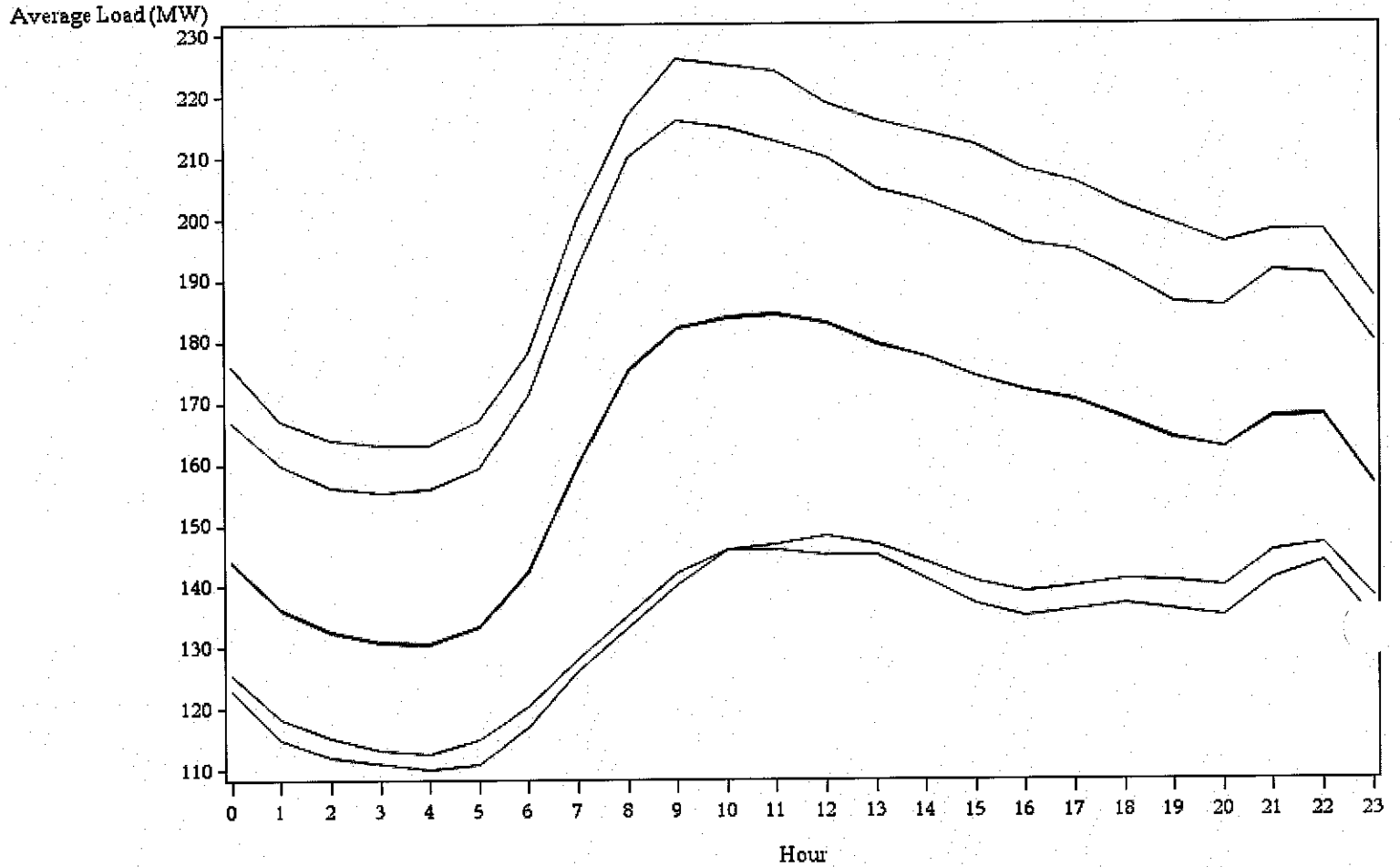
Actual vs. Simulated Average Load by Hour by Month
Load: South Dakota Load - 2016 Month: 3



PLOT Sim P5 Sim Mean Sim P95 Hist P5 Hist Mean Hist P95

Actual vs. Simulated Average Load by Hour by Month

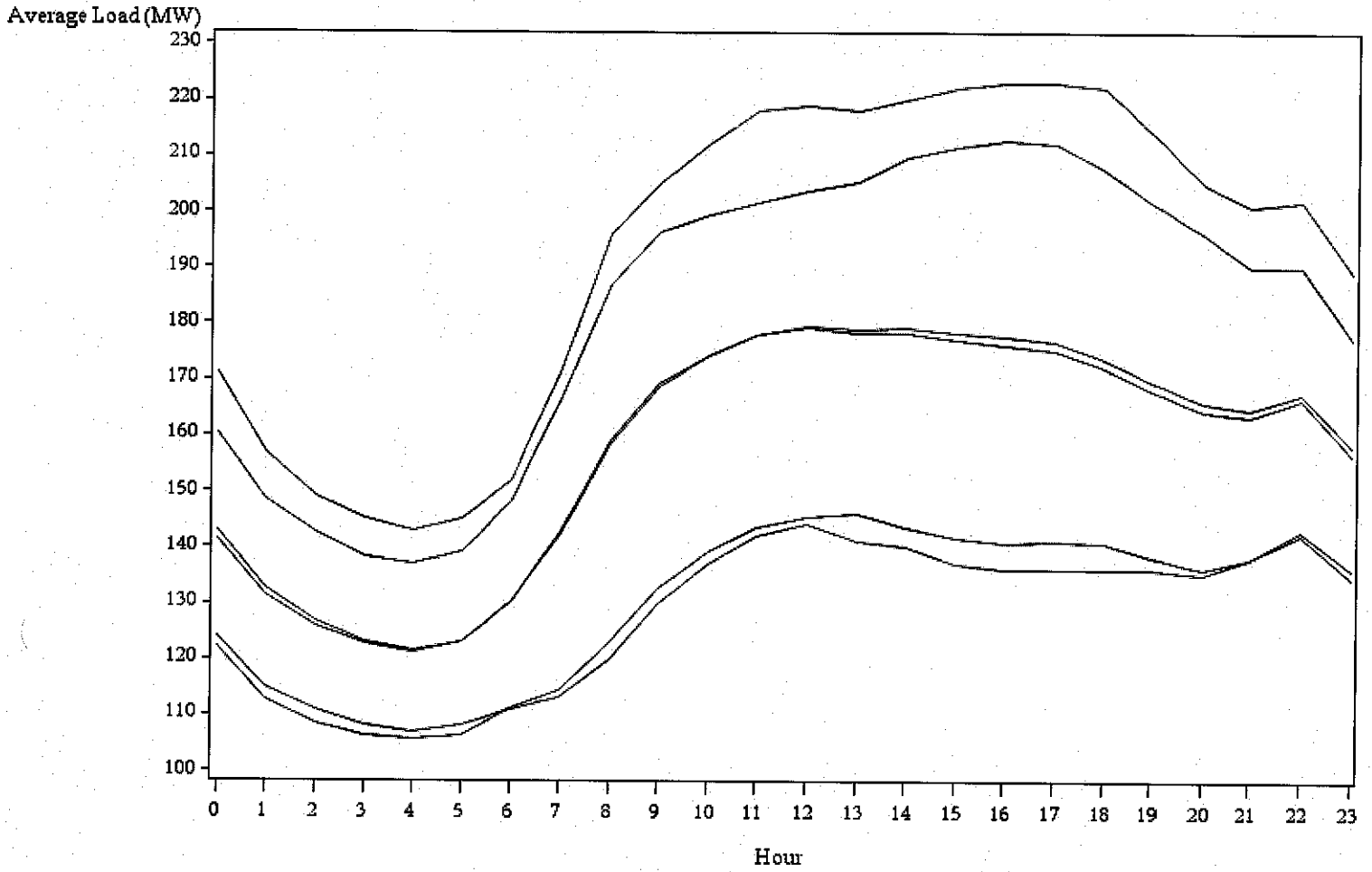
Load: South Dakota Load - 2016 Month: 4



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month

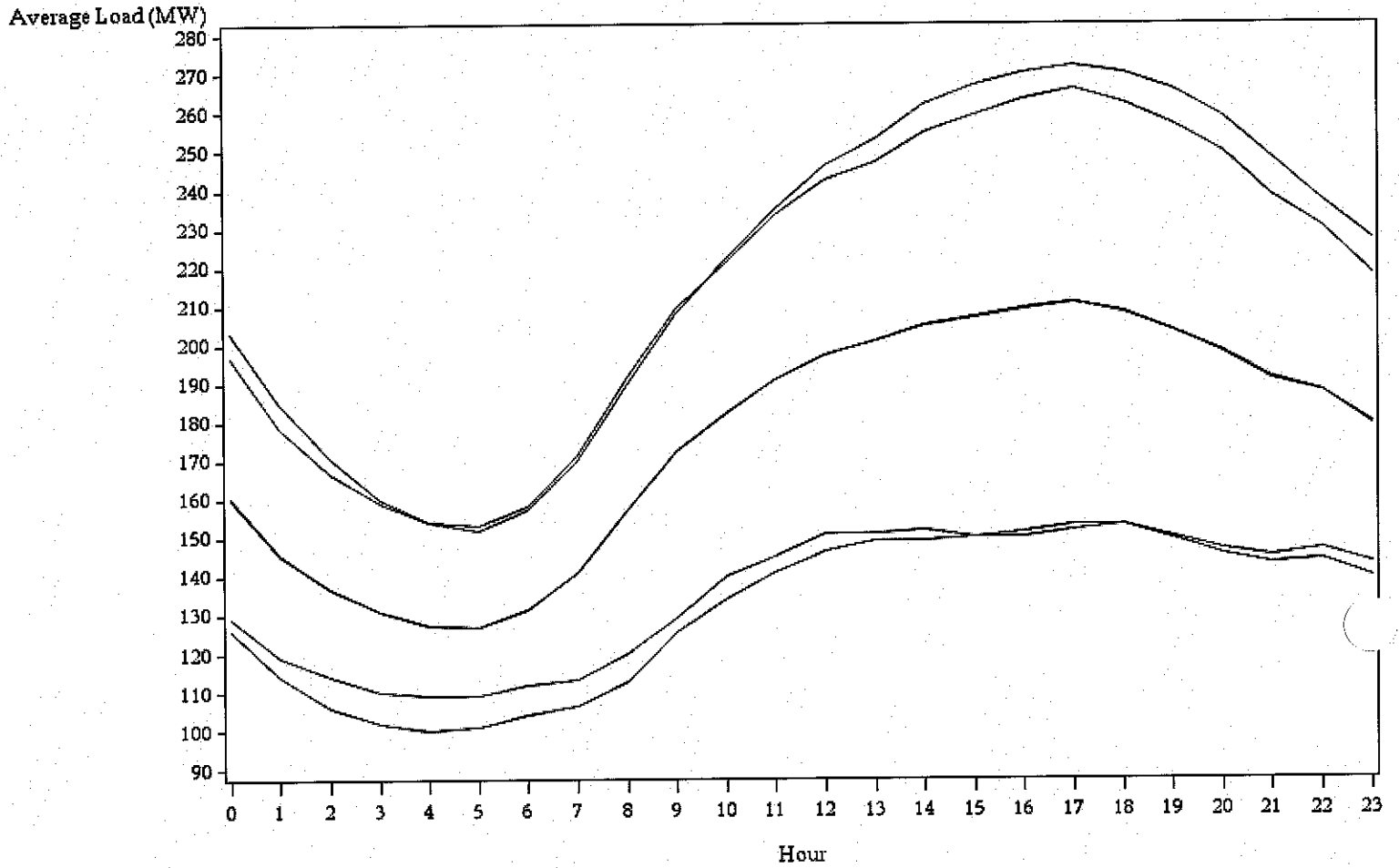
Load: South Dakota Load - 2016 Month: 5



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month

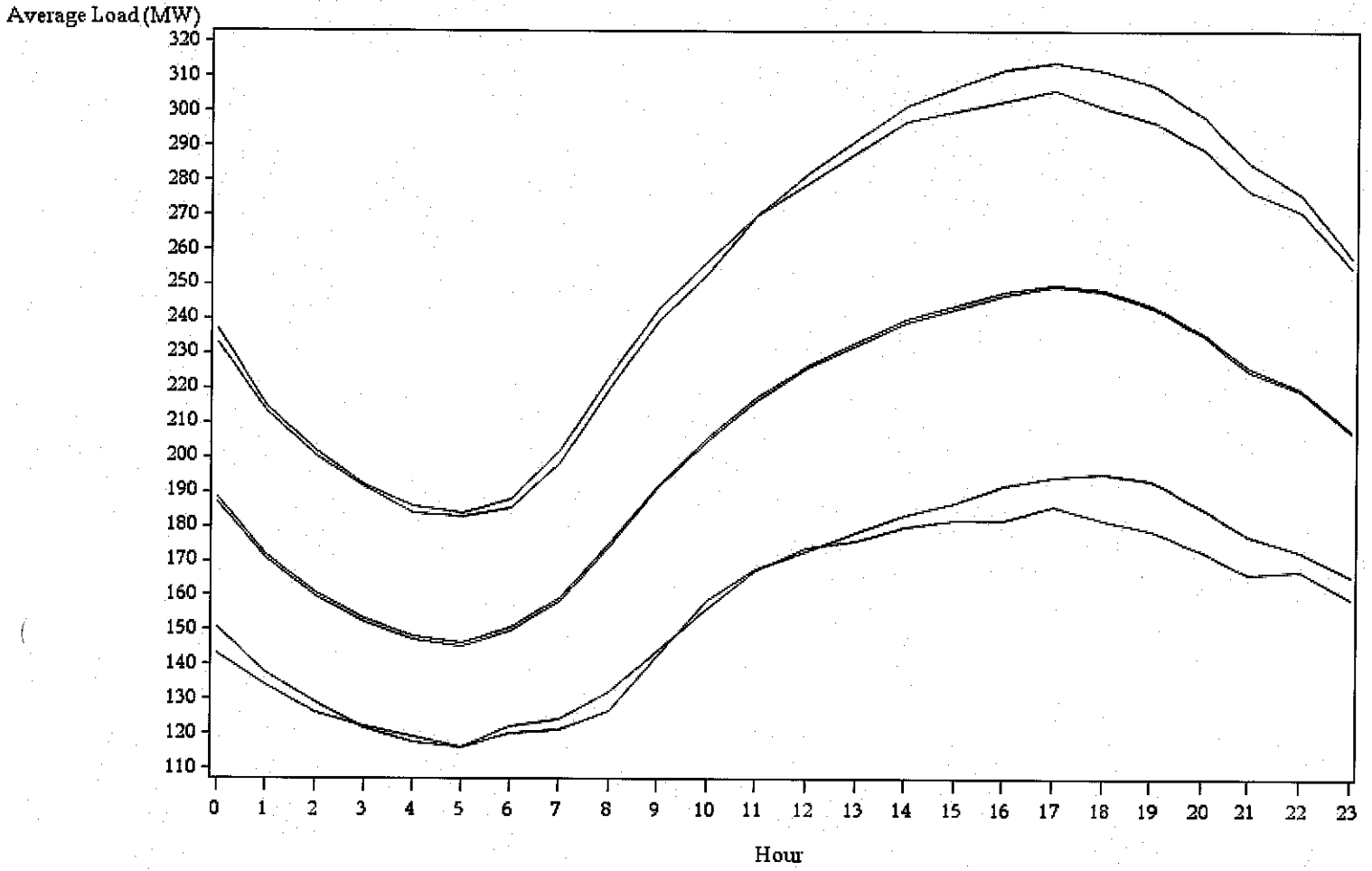
Load: South Dakota Load - 2016 Month: 6



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month

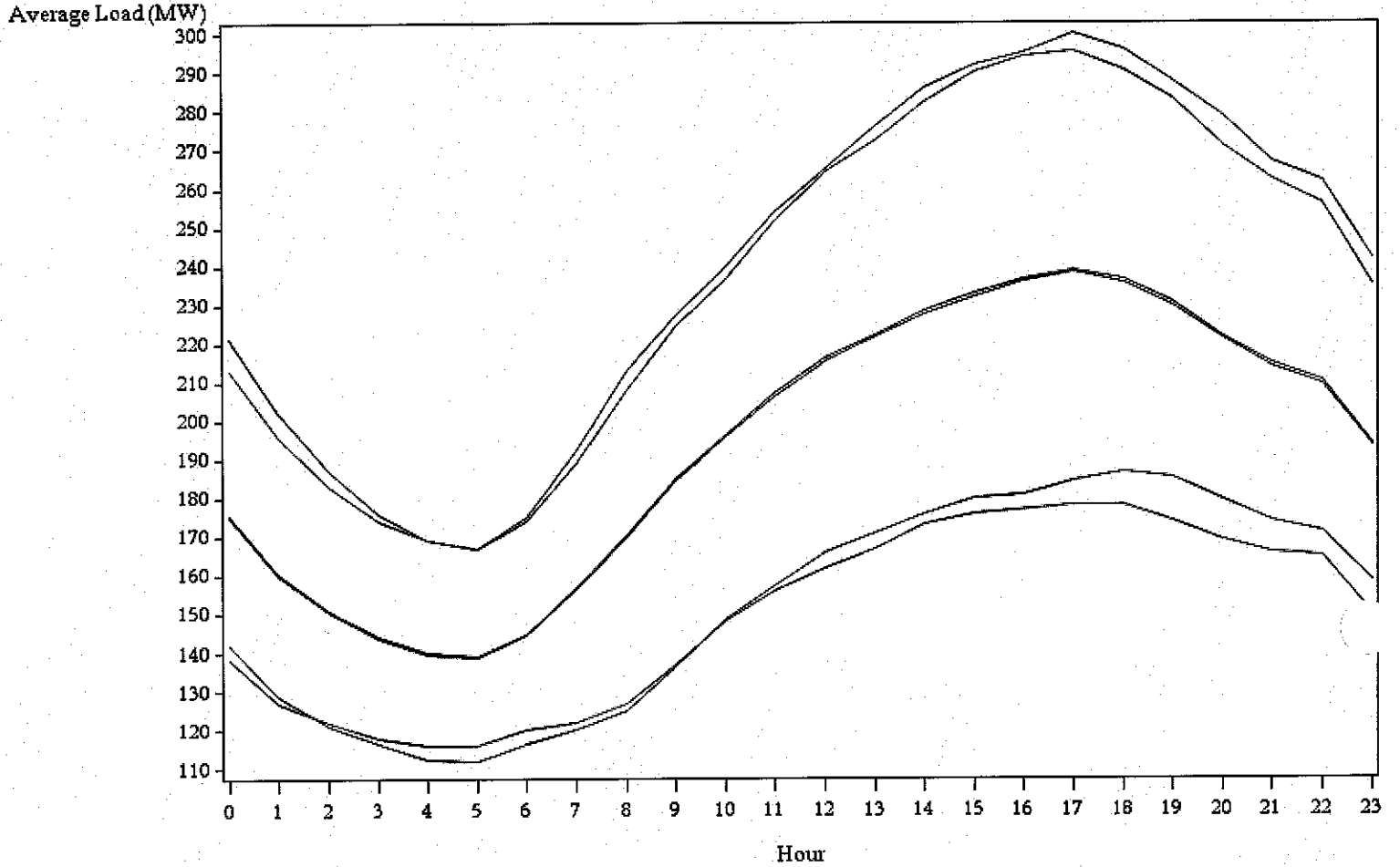
Load: South Dakota Load - 2016 Month: 7



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

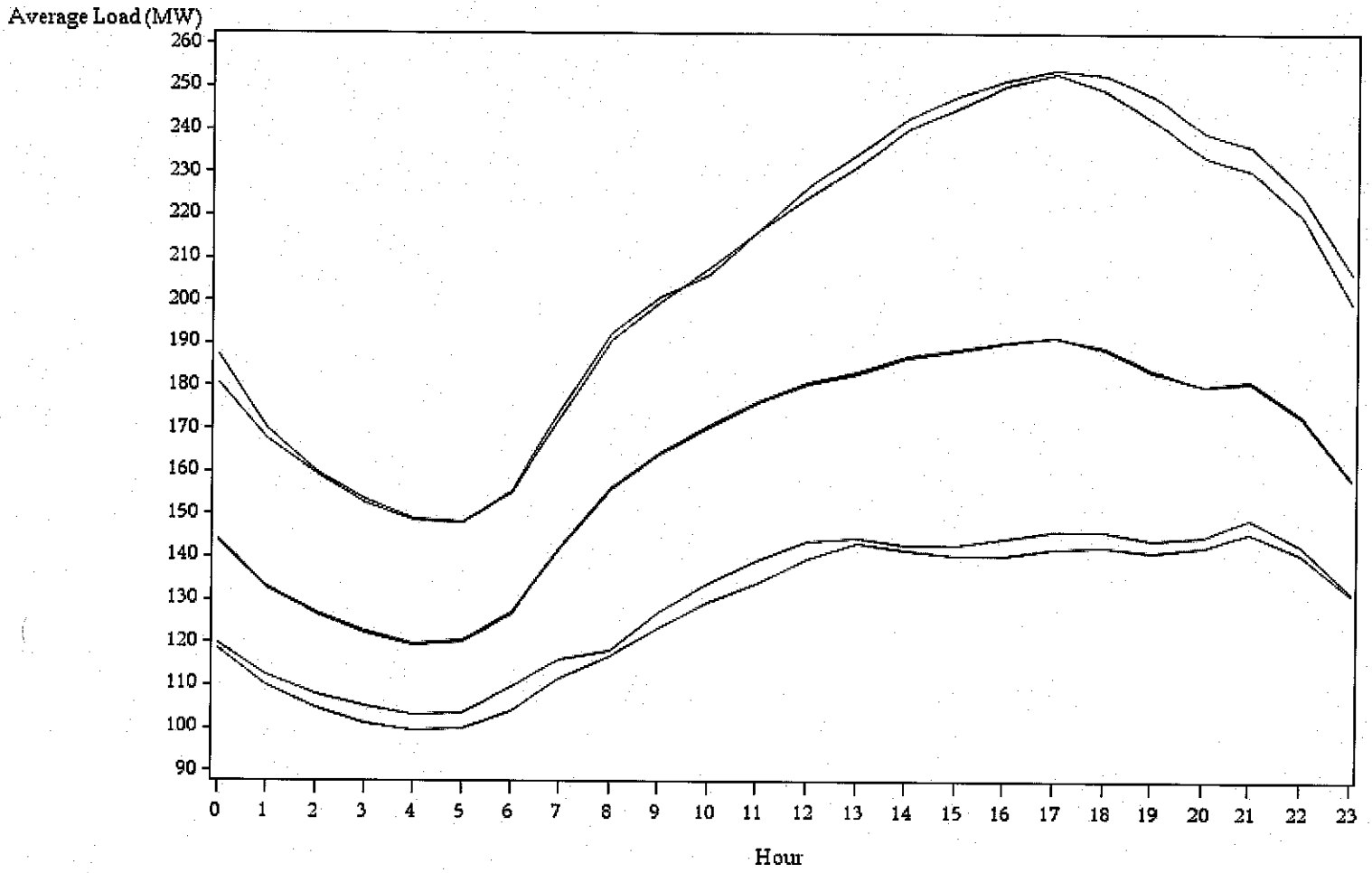
Actual vs. Simulated Average Load by Hour by Month

Load: South Dakota Load - 2016 Month: 8



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

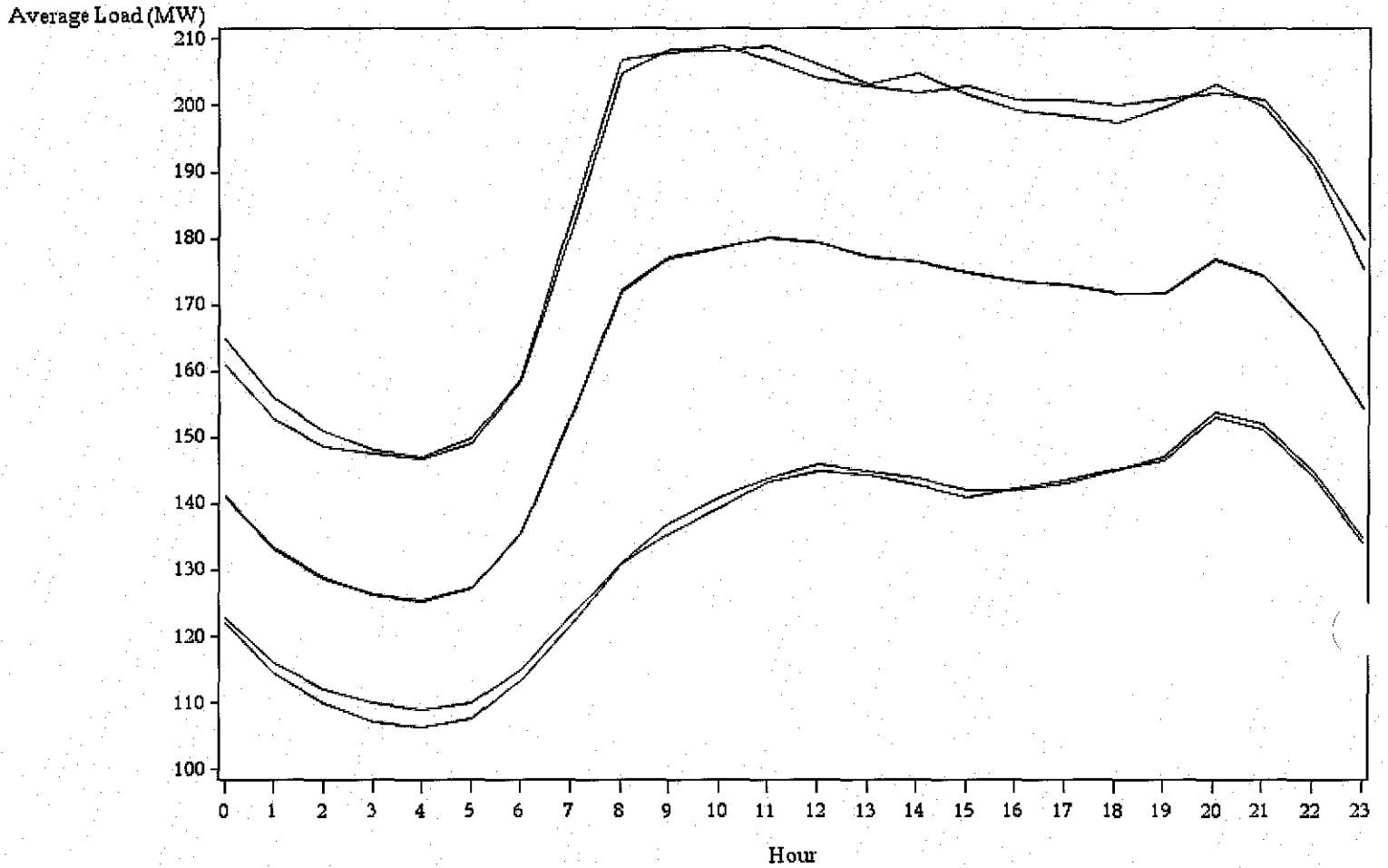
Actual vs. Simulated Average Load by Hour by Month
 Load: South Dakota Load - 2016 Month: 9



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month

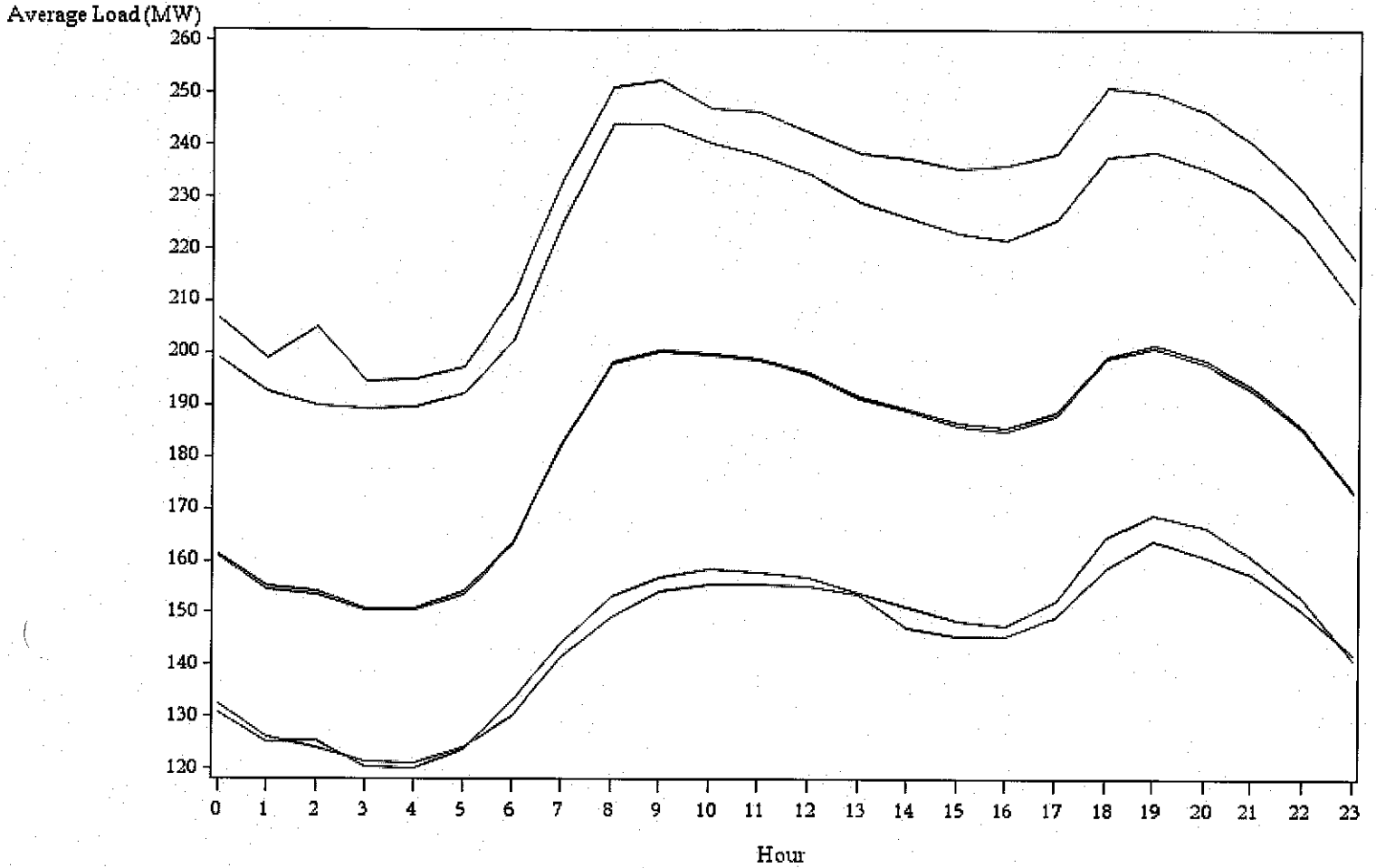
Load: South Dakota Load - 2016 Month: 10



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month

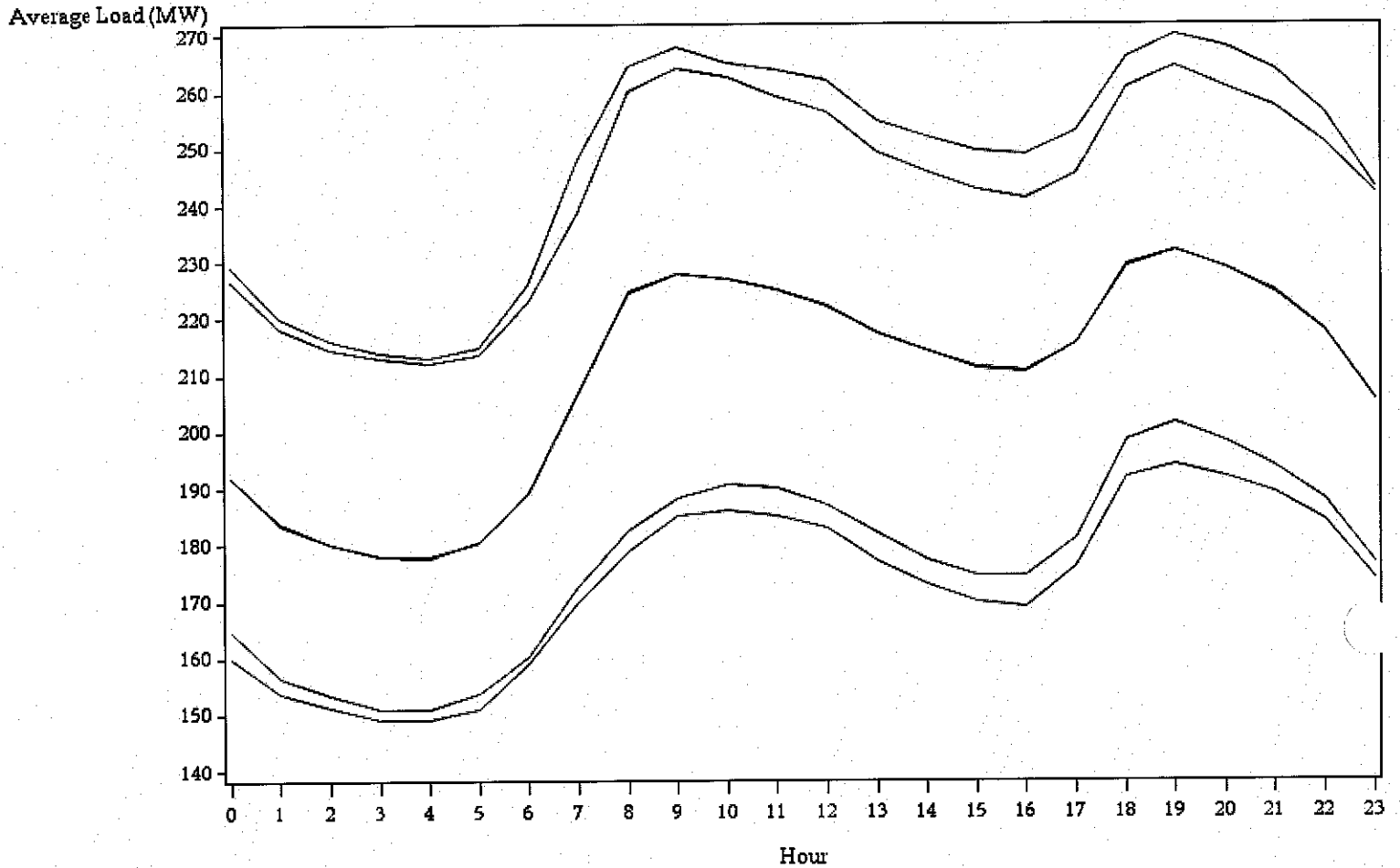
Load: South Dakota Load - 2016 Month: 11



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

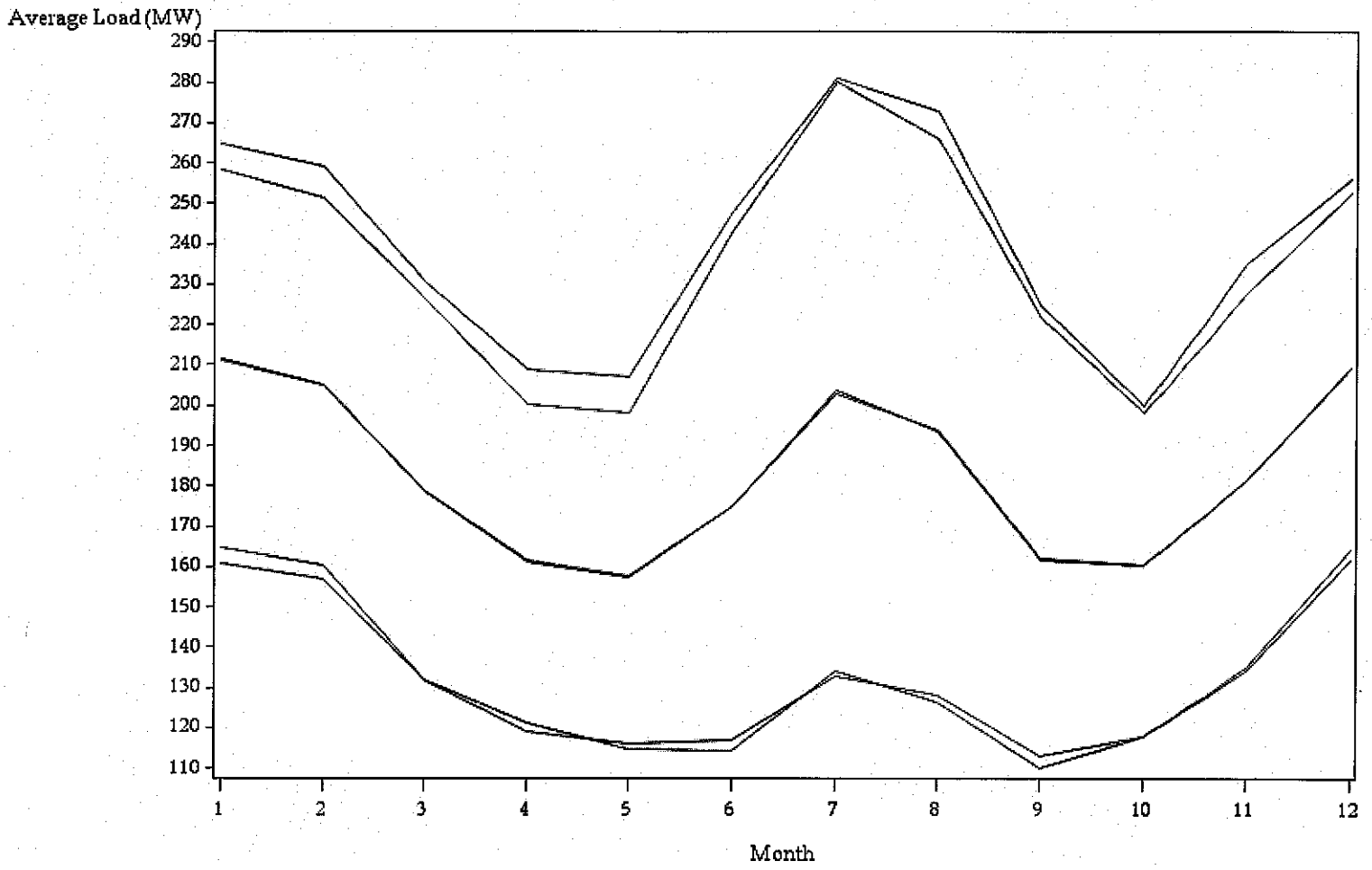
Actual vs. Simulated Average Load by Hour by Month

Load: South Dakota Load - 2016 Month: 12



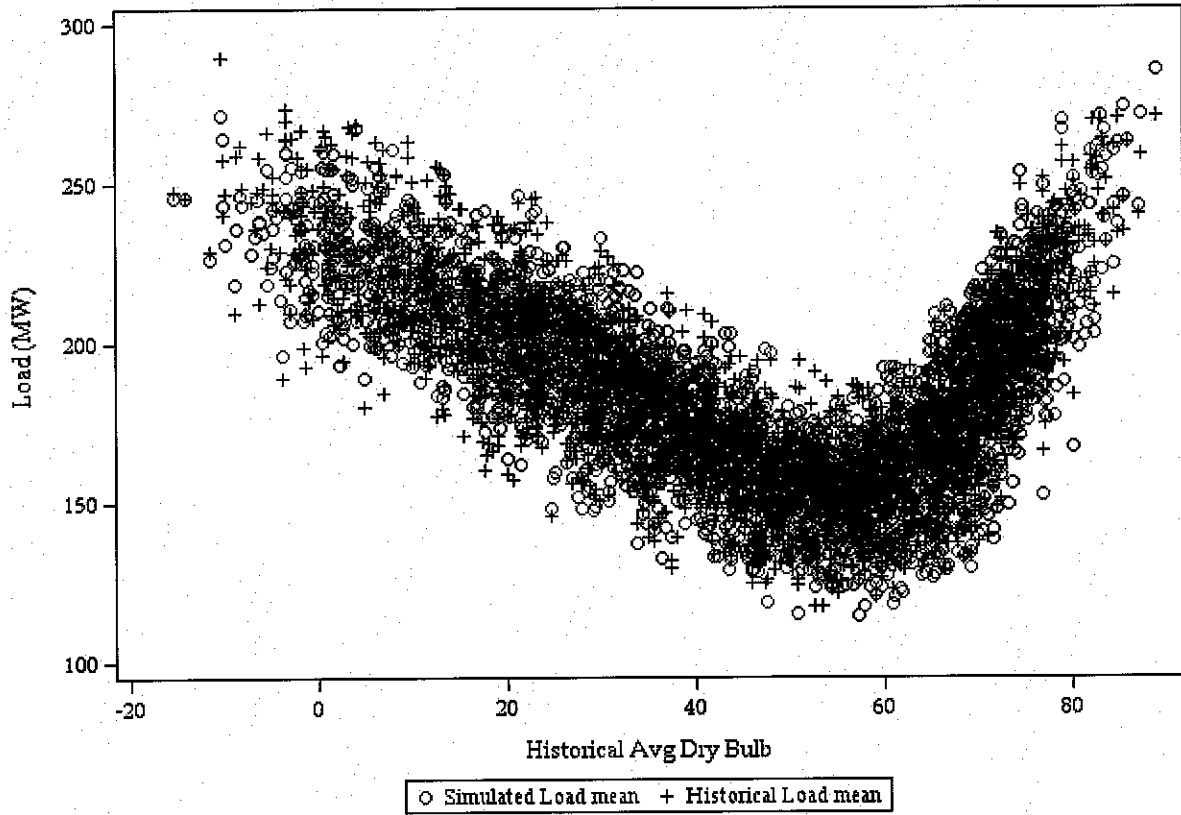
PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Month South Dakota Load - 2016

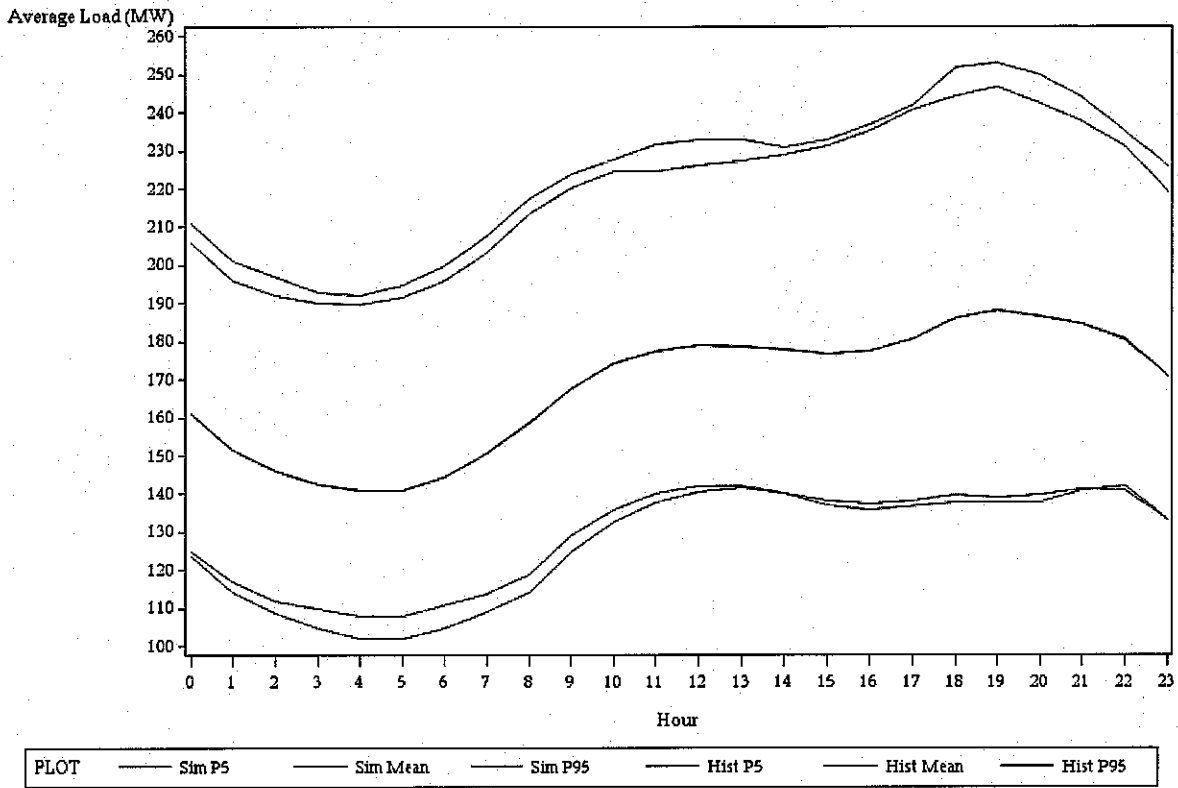


PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

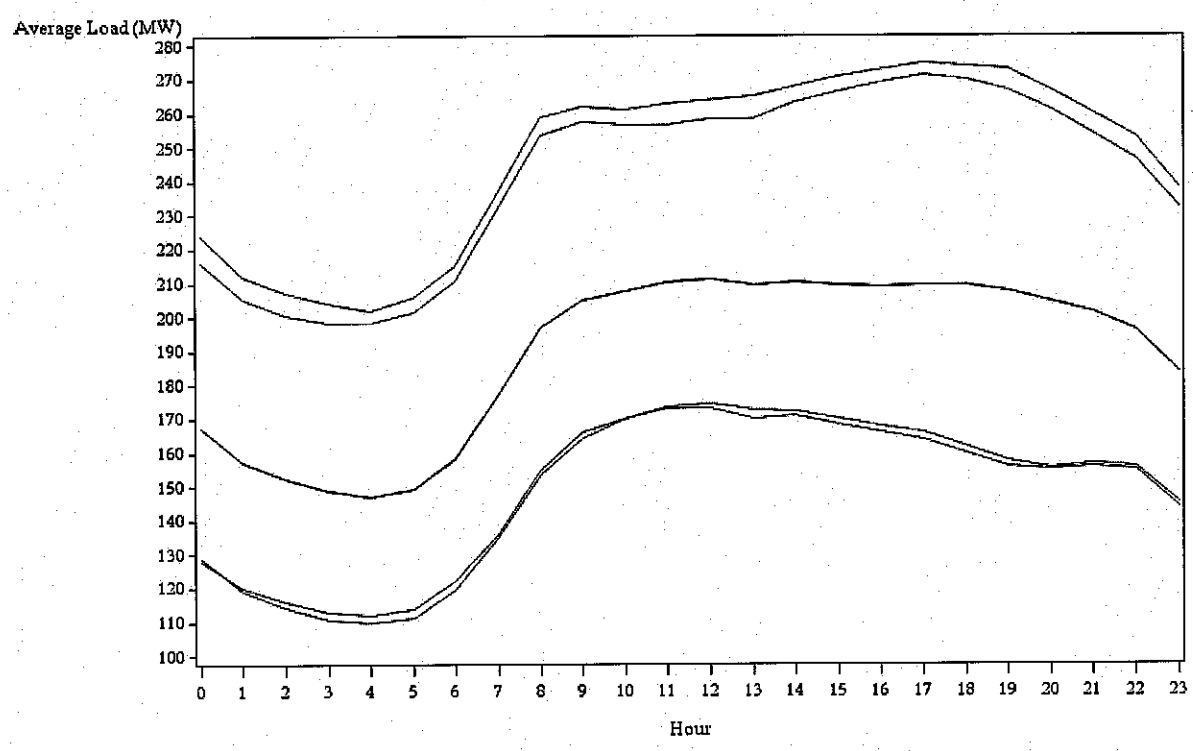
Actual vs. Simulated Weather-Load Relationship
South Dakota Load - 2016



Actual vs. Simulated Average Load by Hour of Day
Weekends
South Dakota Load



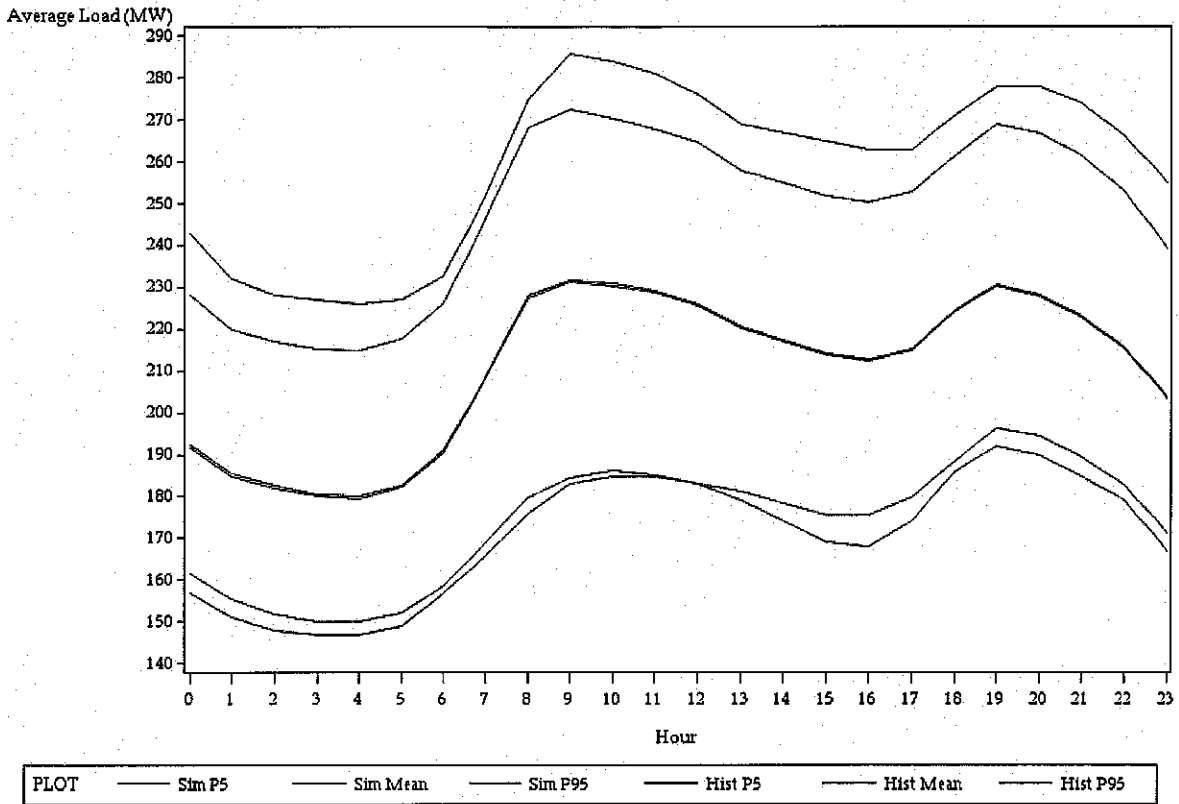
Actual vs. Simulated Average Load by Hour of Day
Weekdays
South Dakota Load



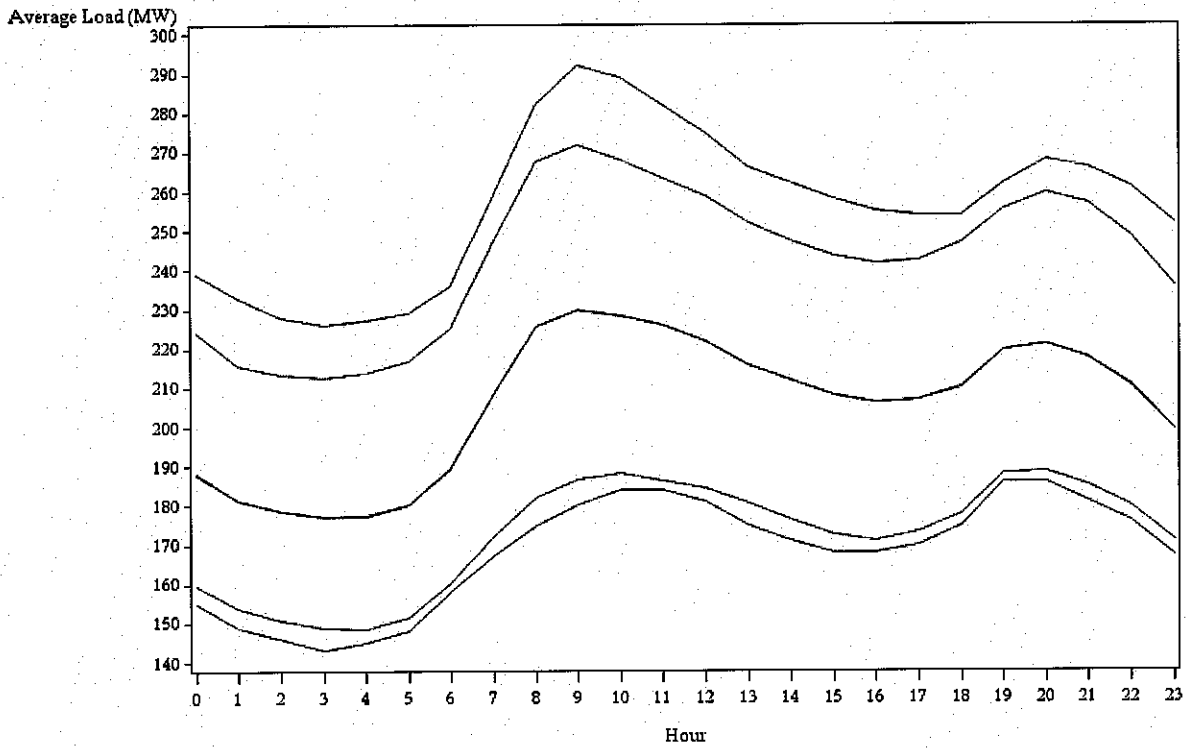
PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month

Load: South Dakota Load Month: 1

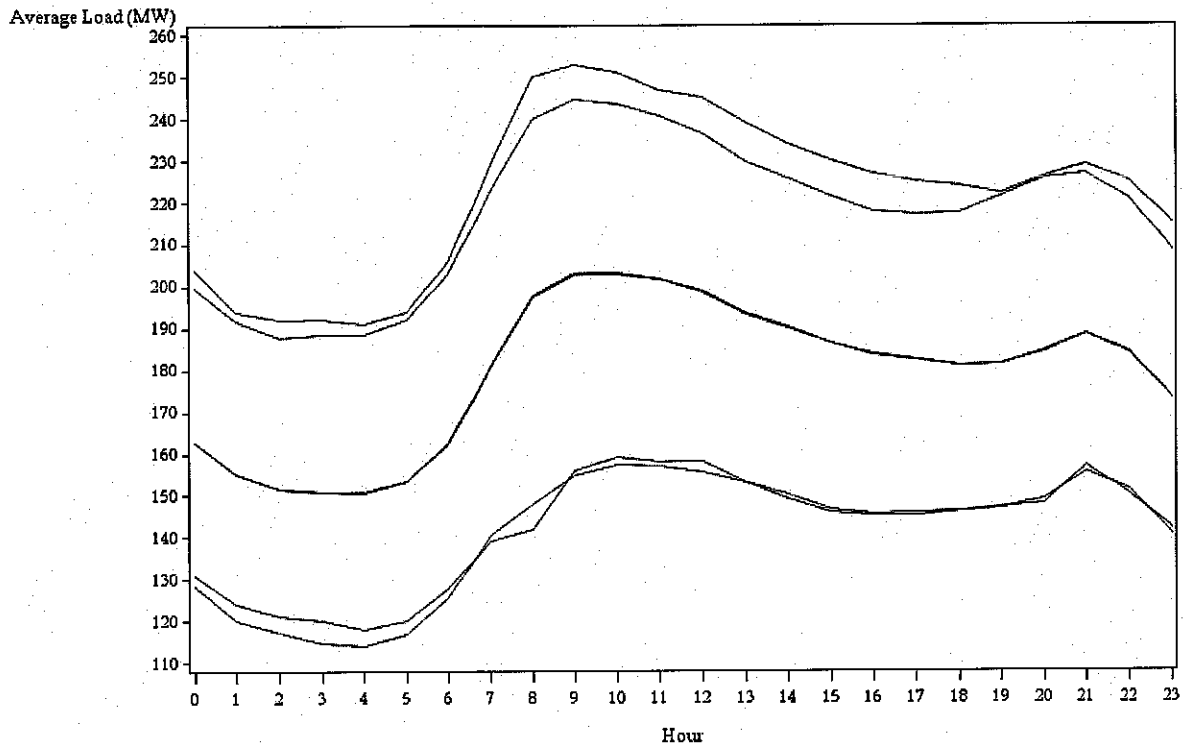


Actual vs. Simulated Average Load by Hour by Month Load: South Dakota Load Month: 2



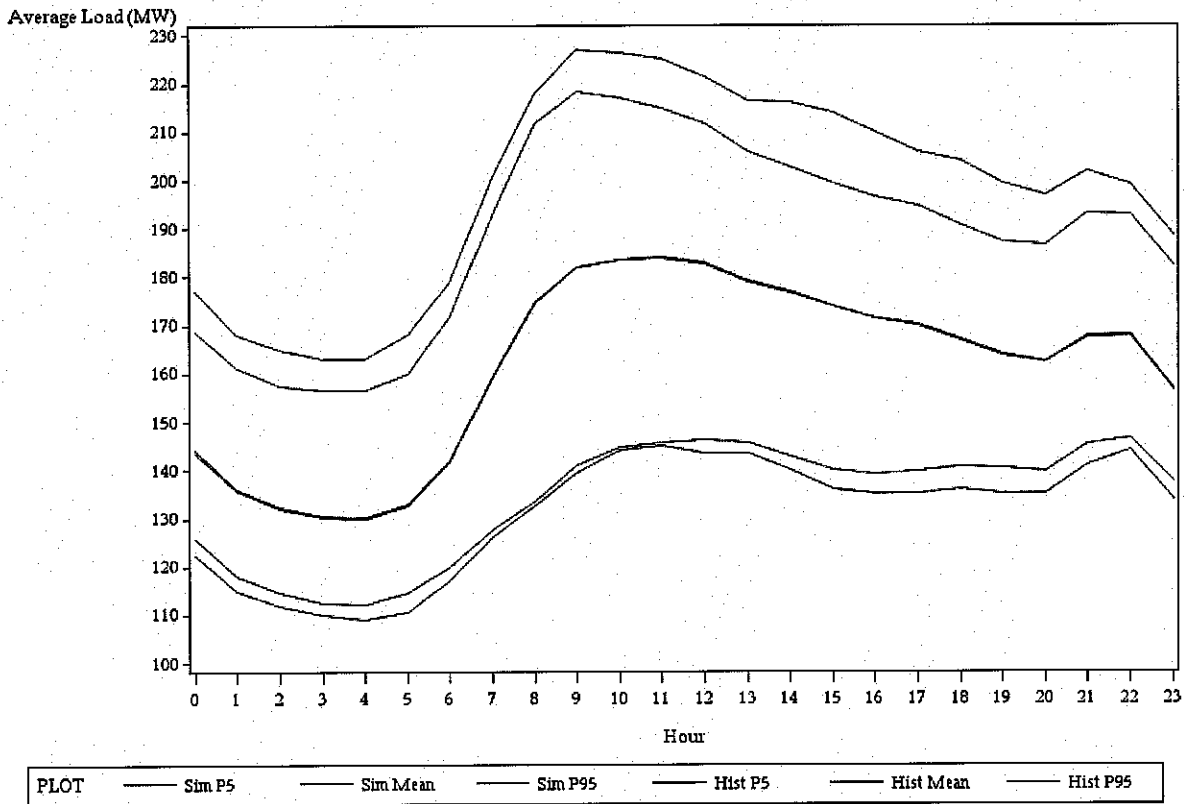
PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month Load: South Dakota Load Month: 3

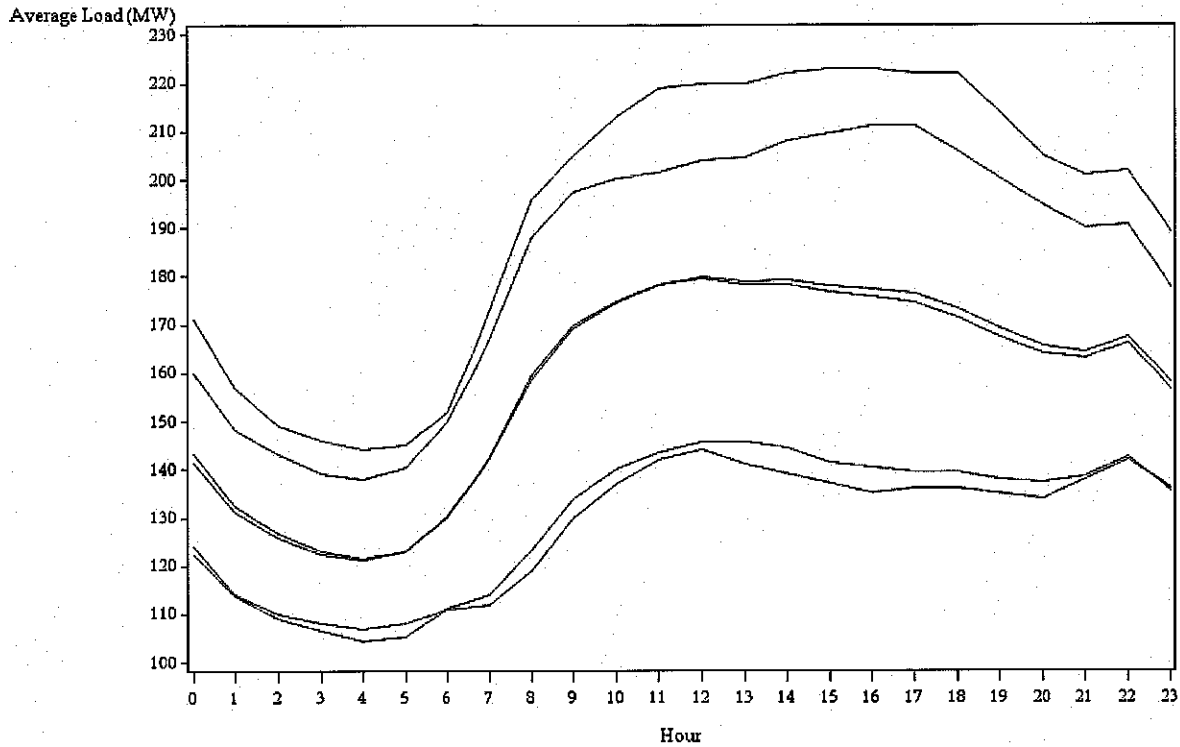


PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month
 Load: South Dakota Load Month: 4

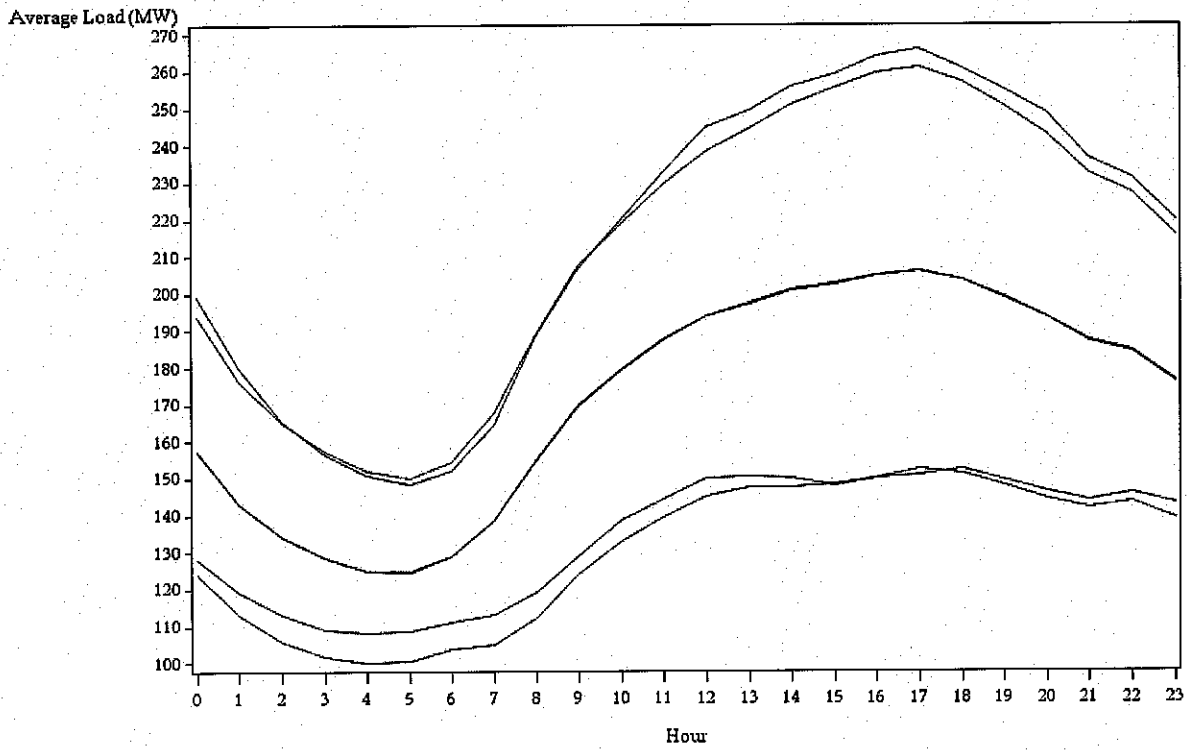


Actual vs. Simulated Average Load by Hour by Month
 Load: South Dakota Load Month: 5



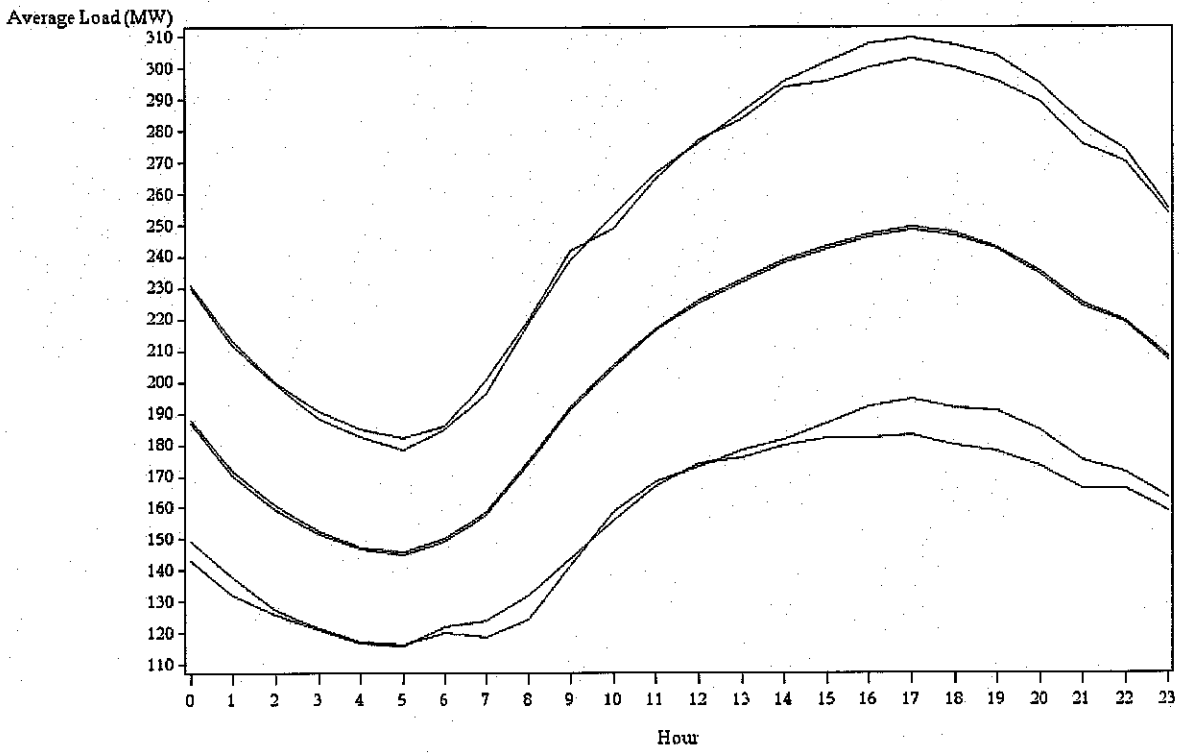
PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month
Load: South Dakota Load Month: 6



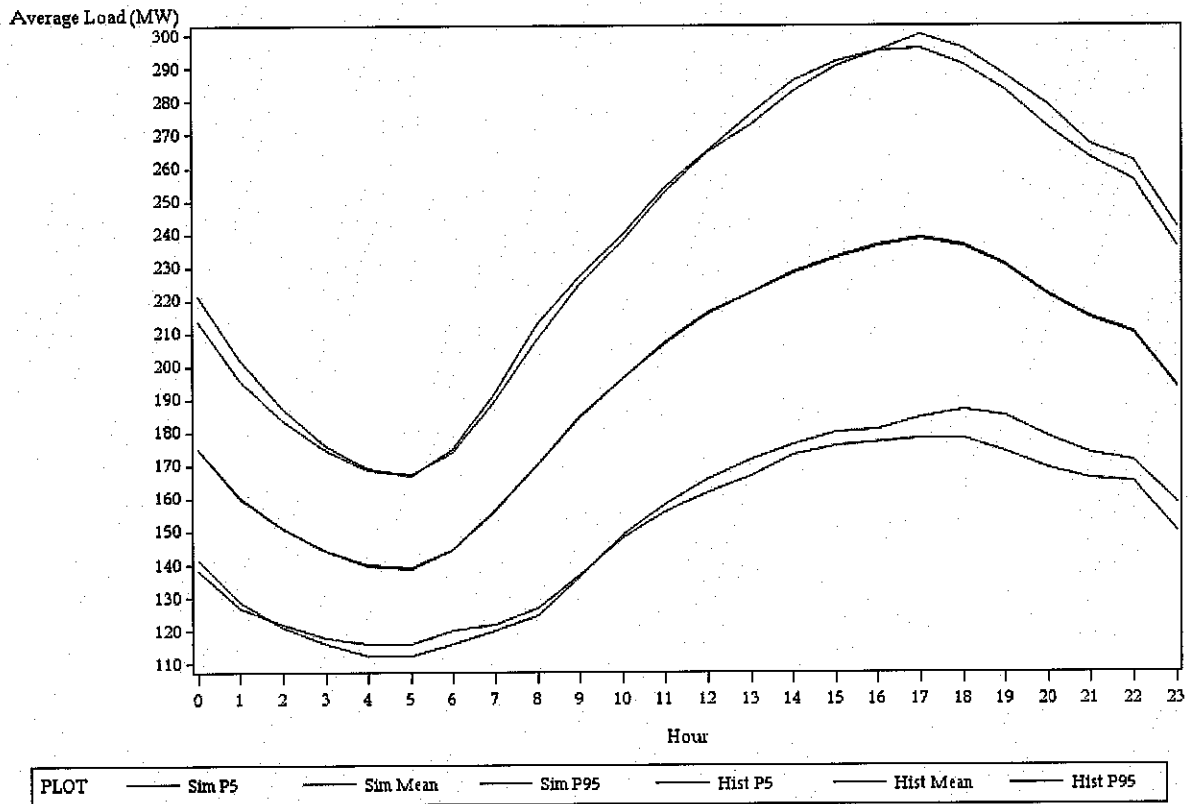
PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month
Load: South Dakota Load Month: 7

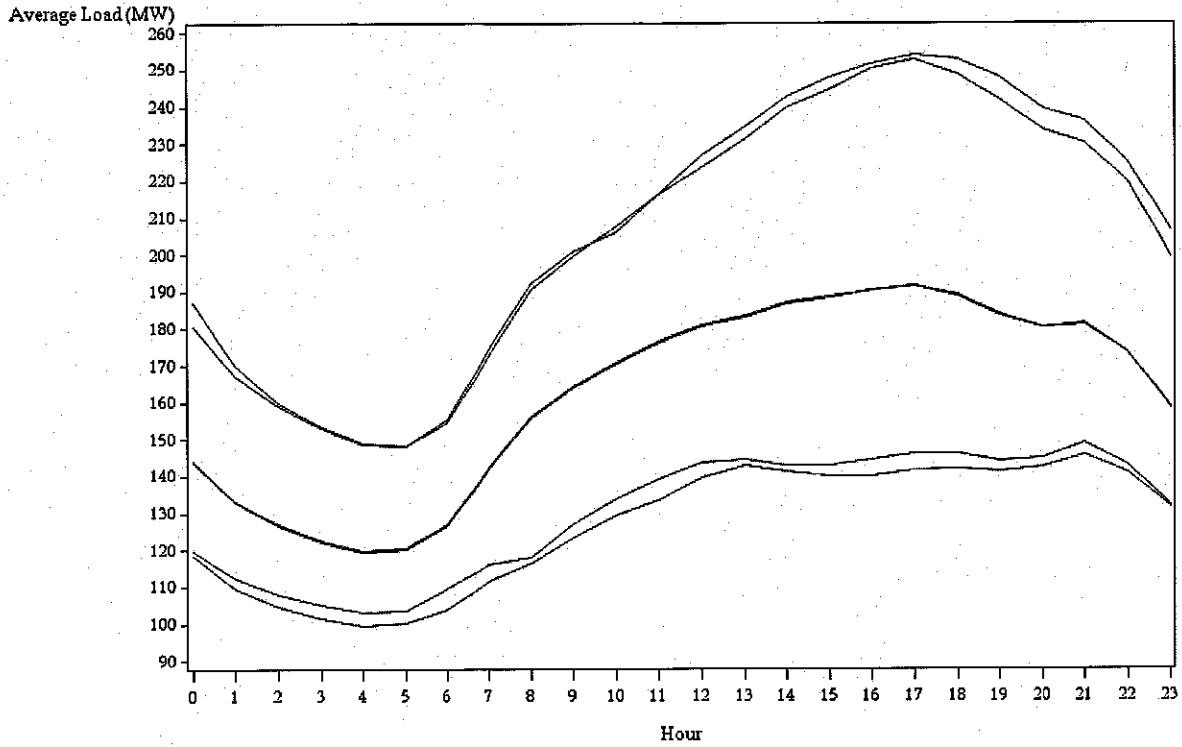


PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month
Load: South Dakota Load Month: 8



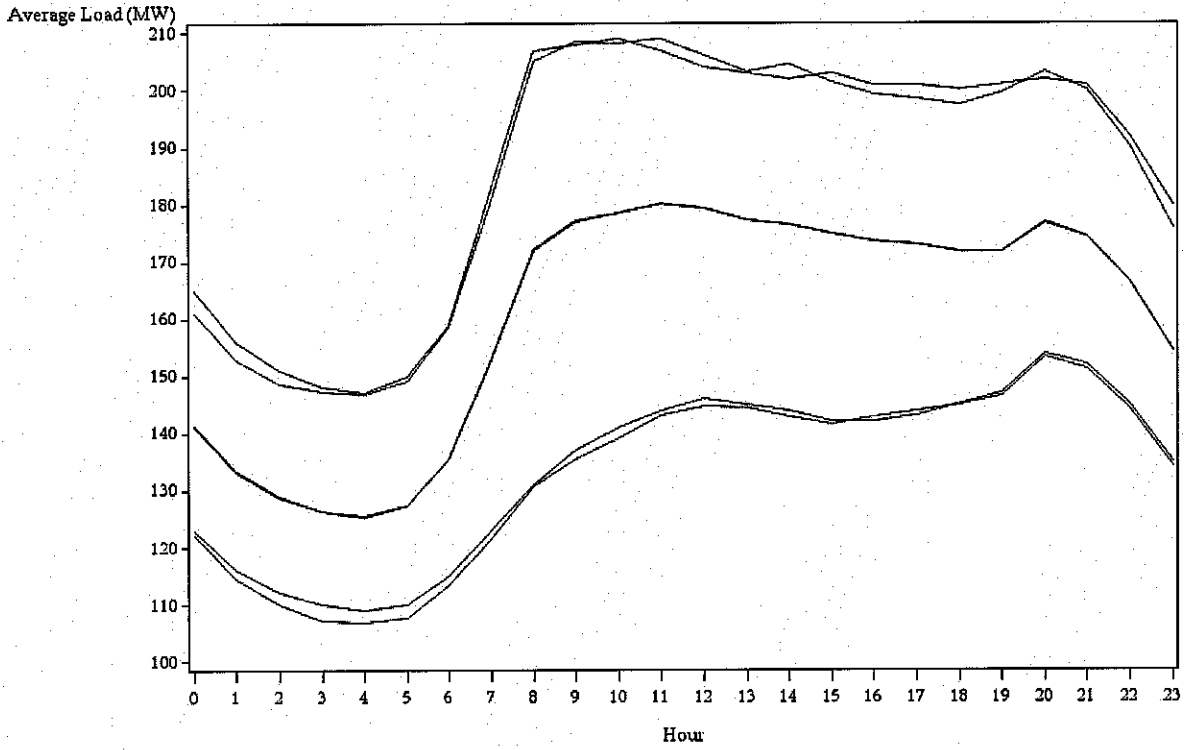
Actual vs. Simulated Average Load by Hour by Month Load: South Dakota Load Month: 9



PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

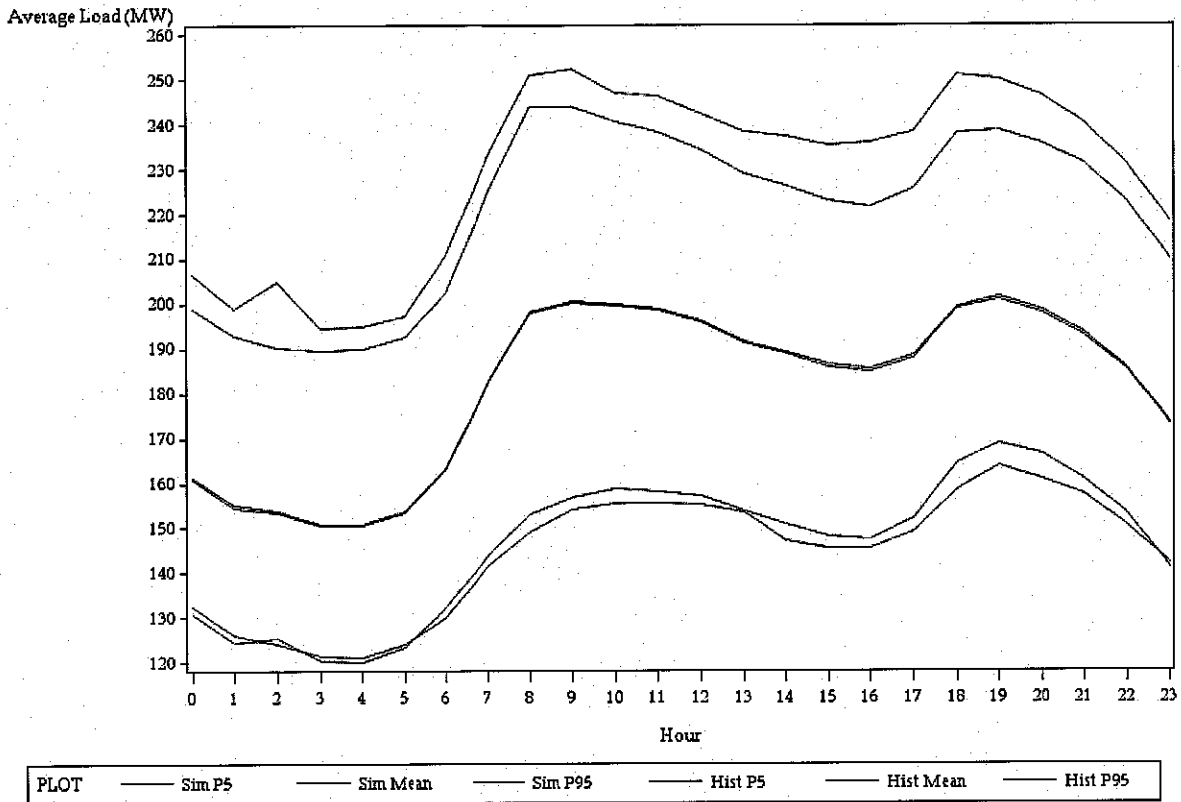
Actual vs. Simulated Average Load by Hour by Month

Load: South Dakota Load Month: 10

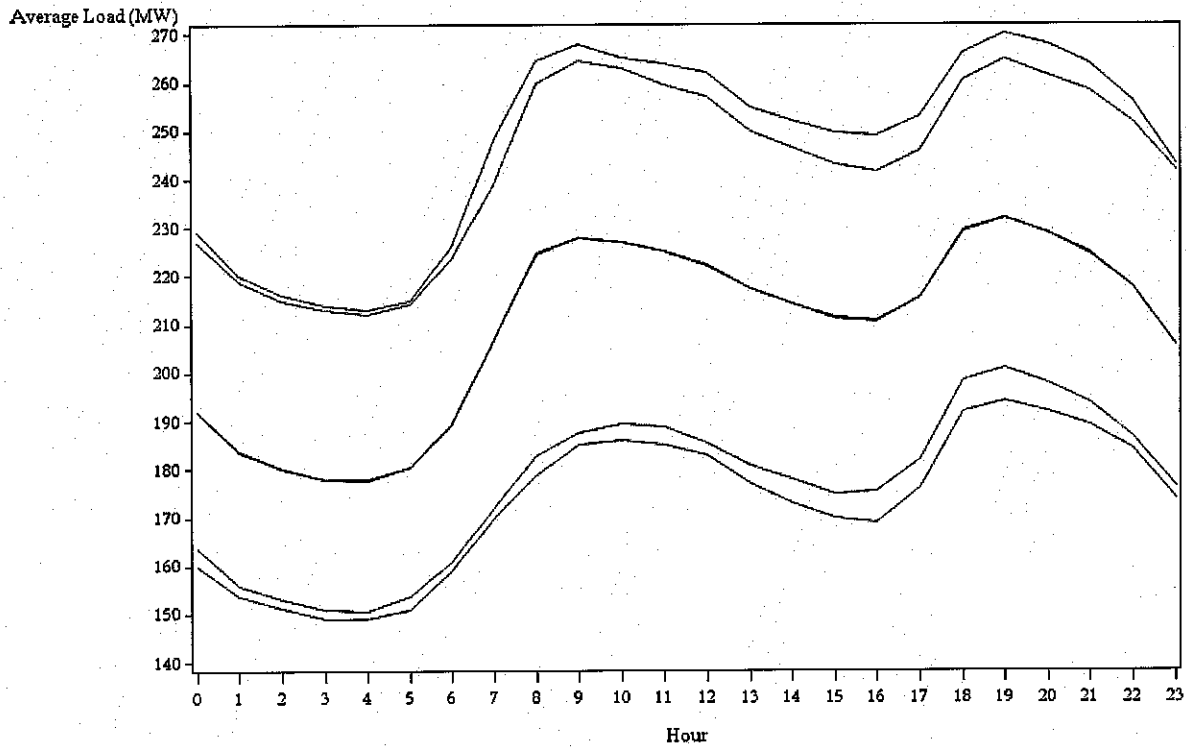


PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

Actual vs. Simulated Average Load by Hour by Month
 Load: South Dakota Load Month: 11

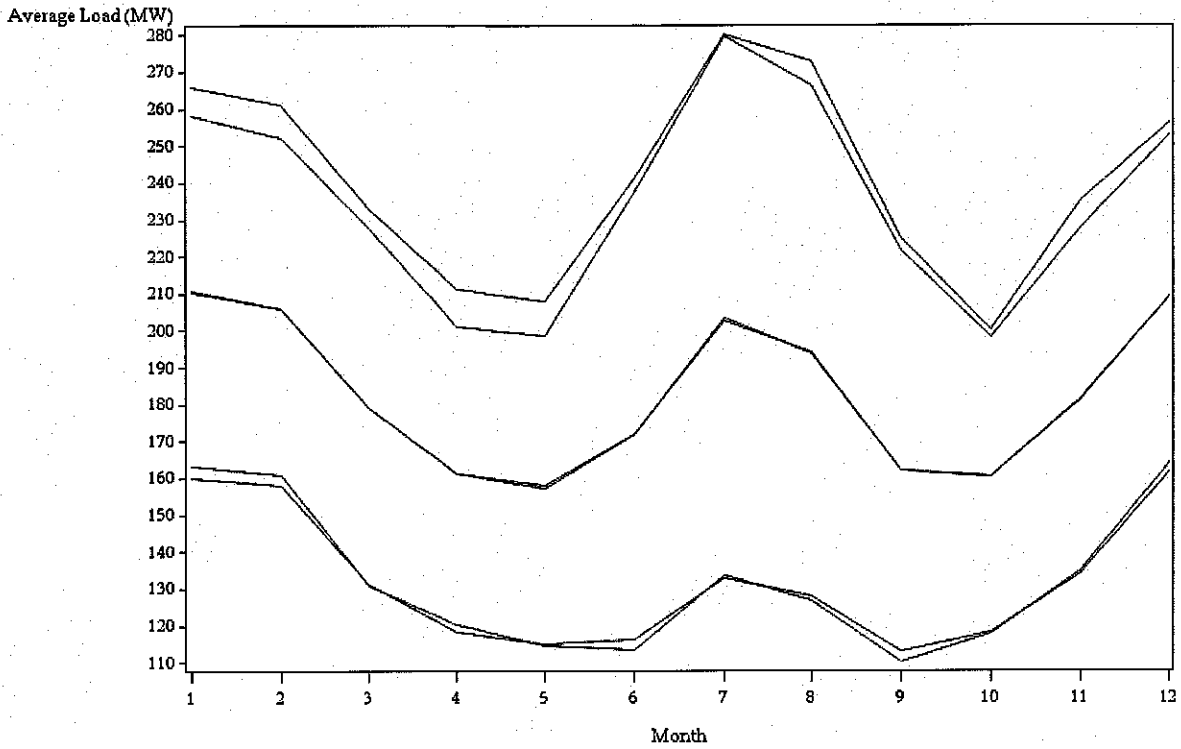


Actual vs. Simulated Average Load by Hour by Month Load: South Dakota Load Month: 12

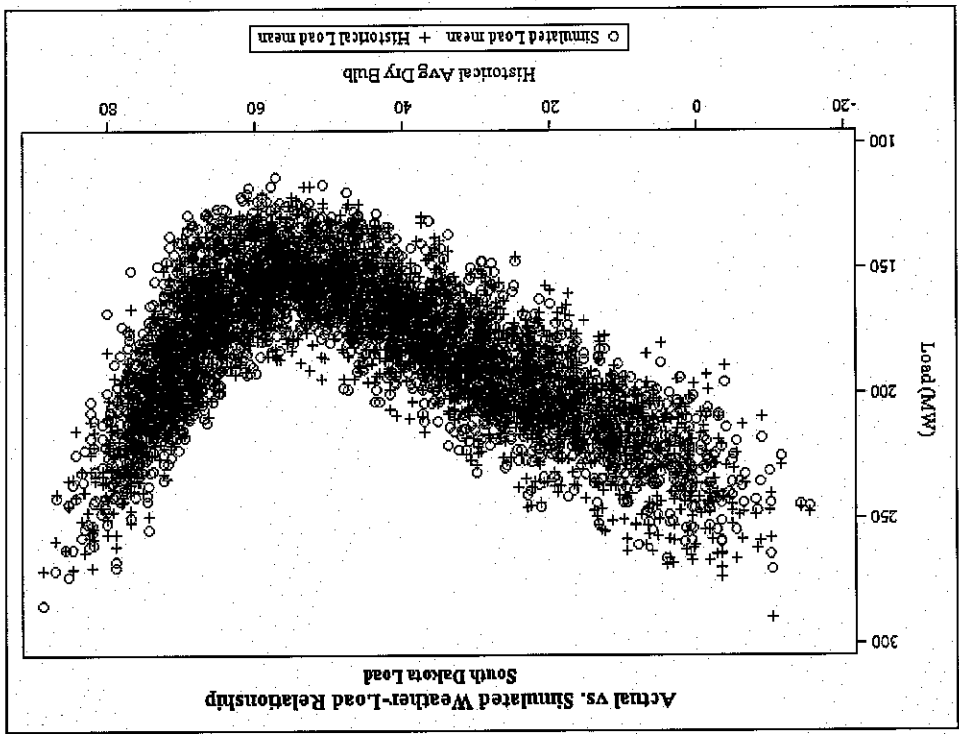


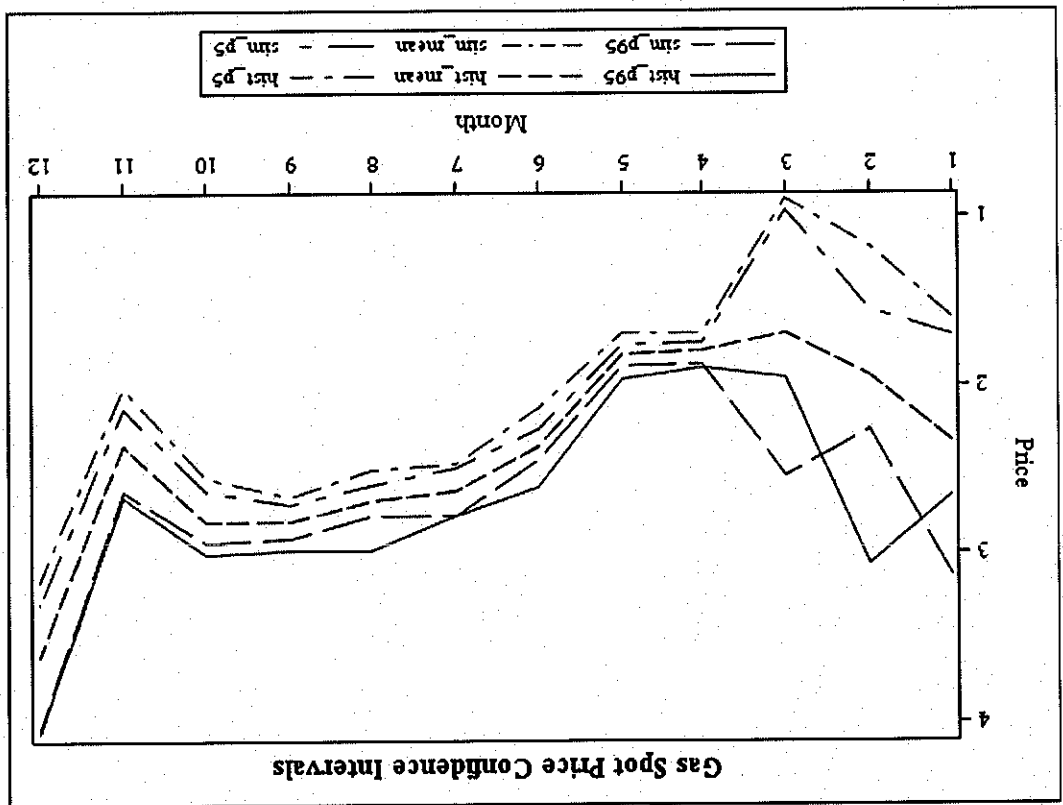
PLOT Sim P5 Sim Mean Sim P95 Hist P5 Hist Mean Hist P95

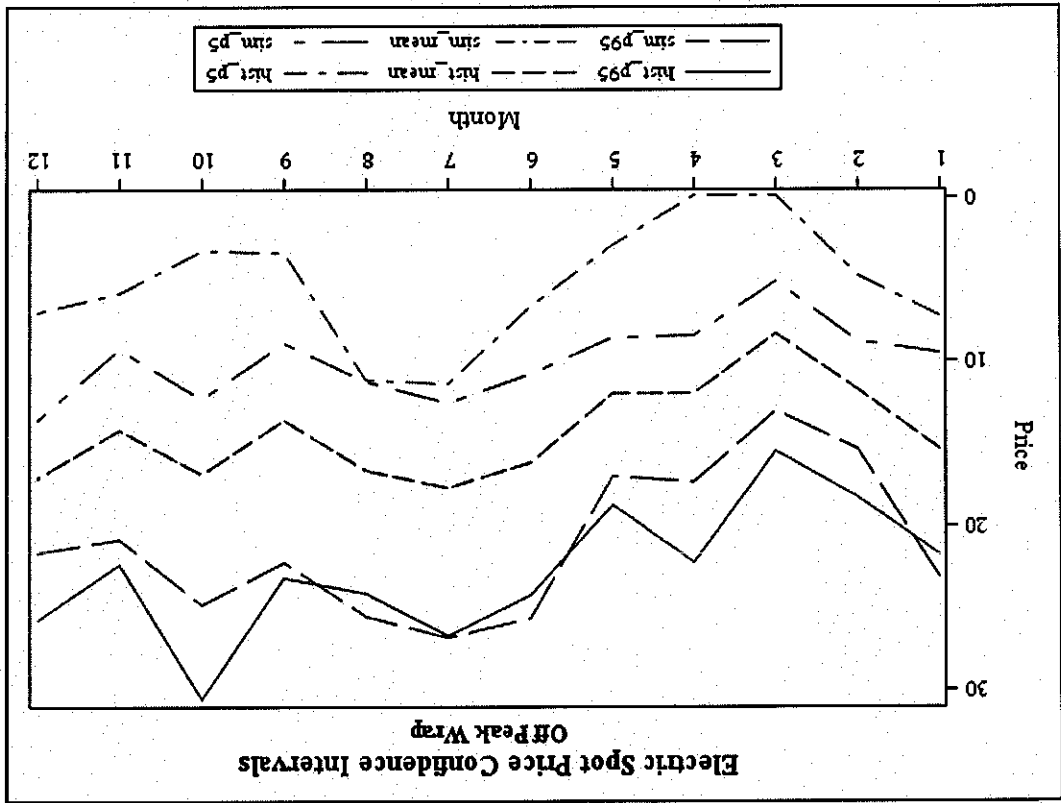
Actual vs. Simulated Average Load by Month South Dakota Load

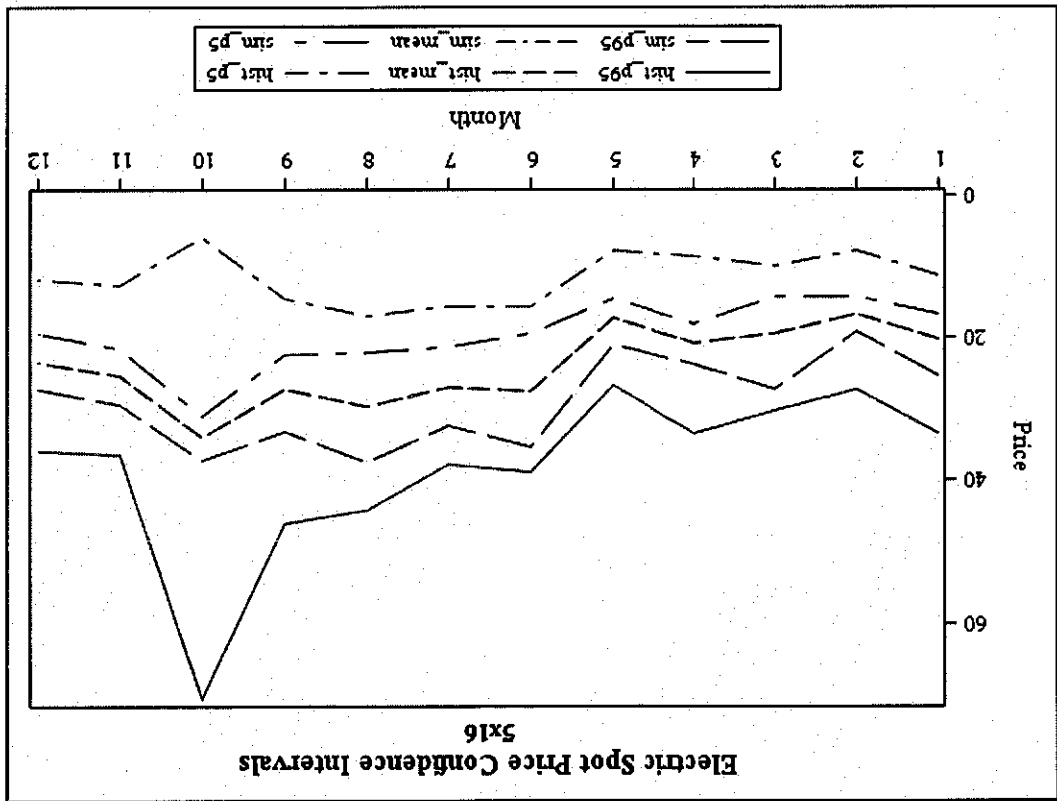


PLOT — Sim P5 — Sim Mean — Sim P95 — Hist P5 — Hist Mean — Hist P95

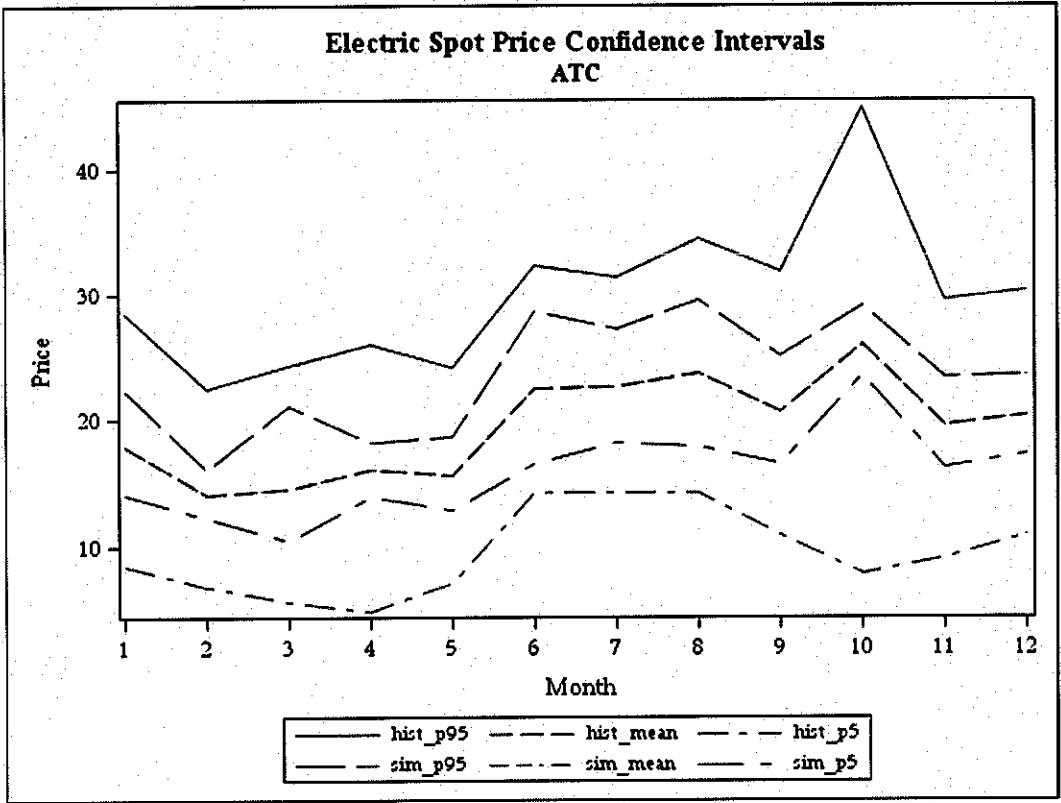




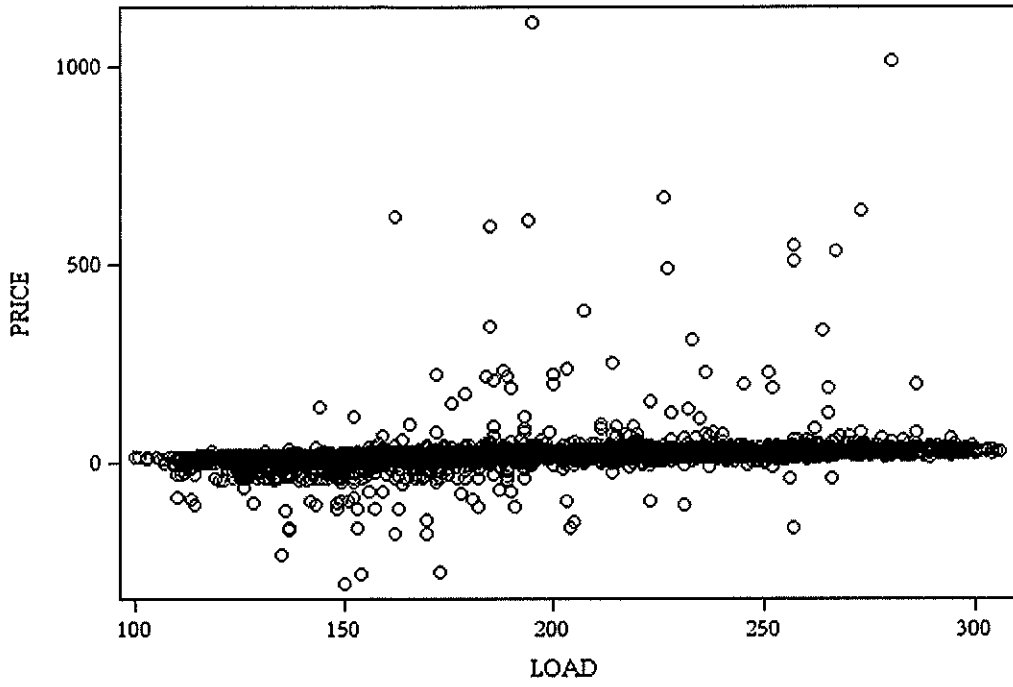




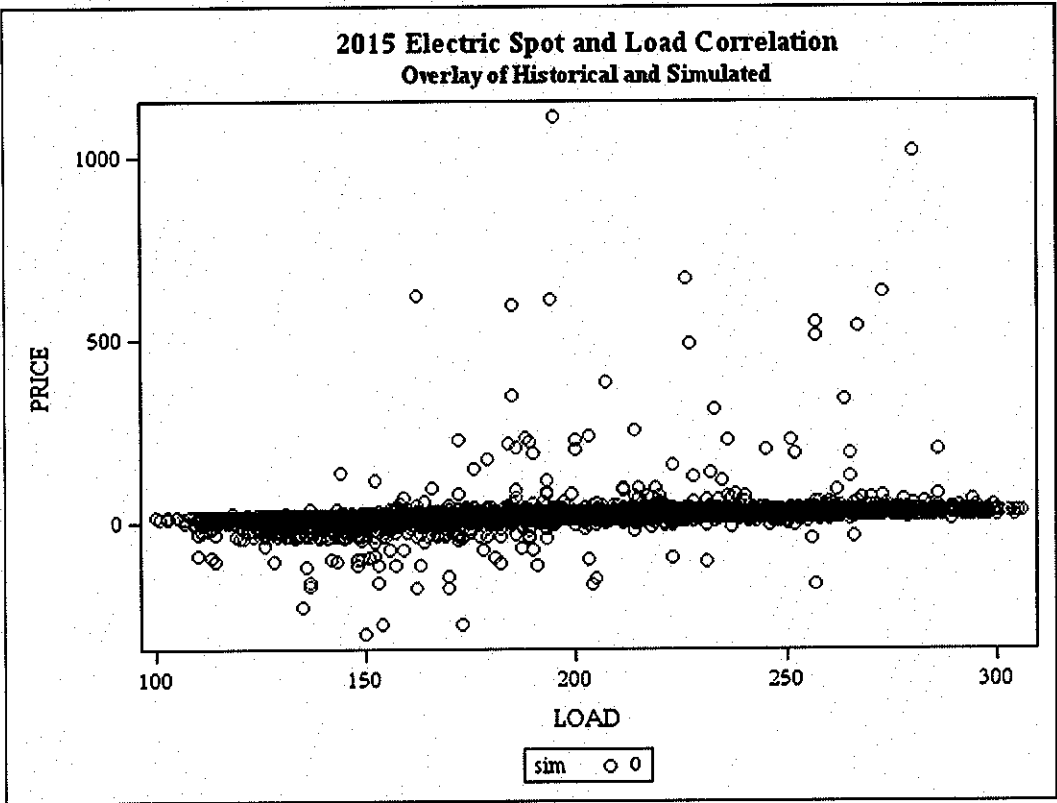
Electric Spot Price Confidence Intervals ATC



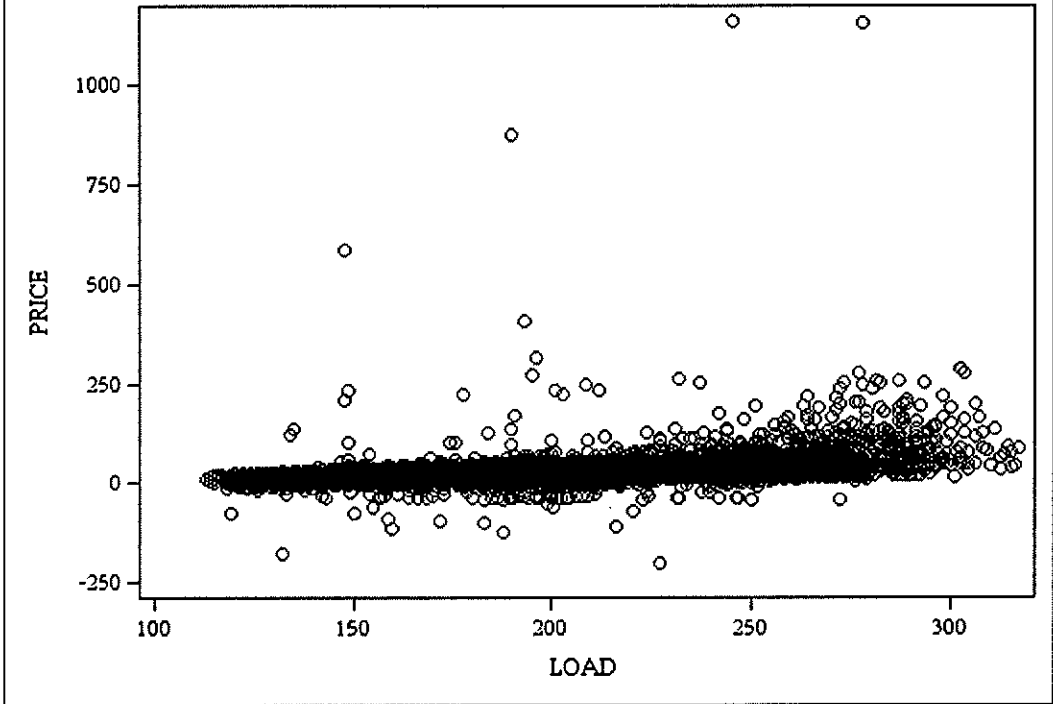
2015 Electric Spot and Load Correlation Historical



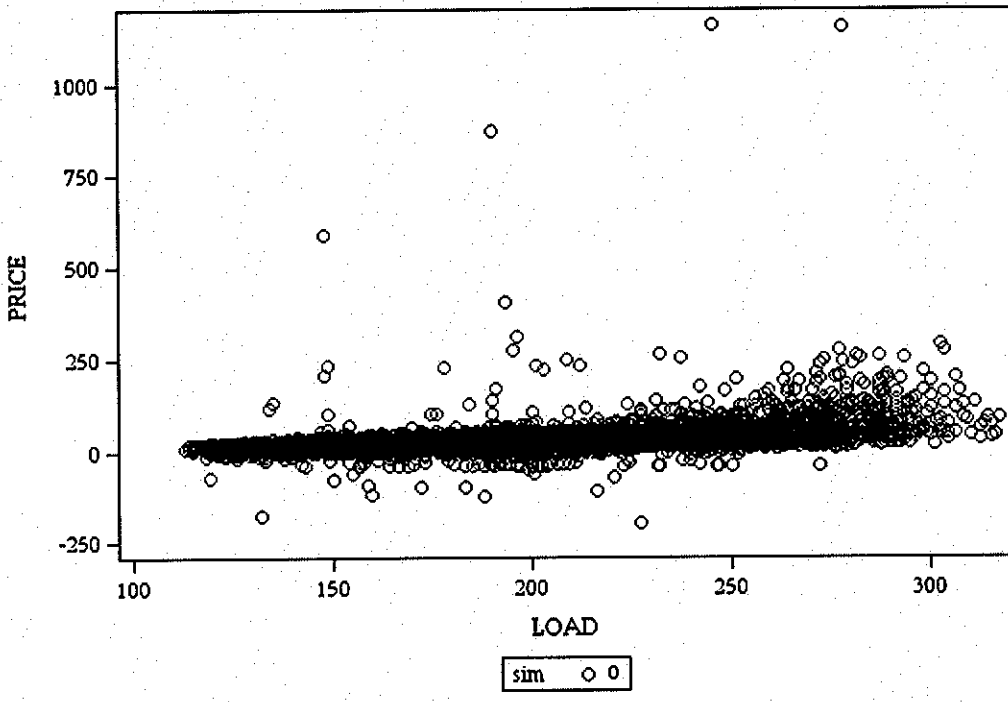
**2015 Electric Spot and Load Correlation
Overlay of Historical and Simulated**

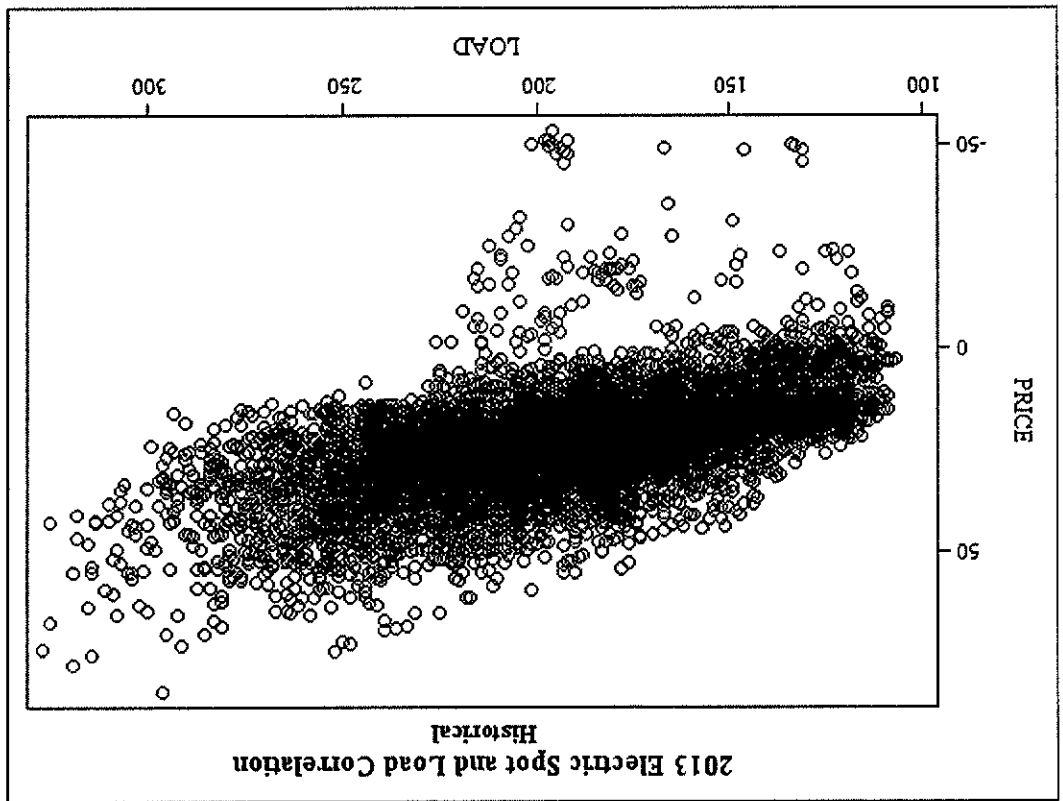


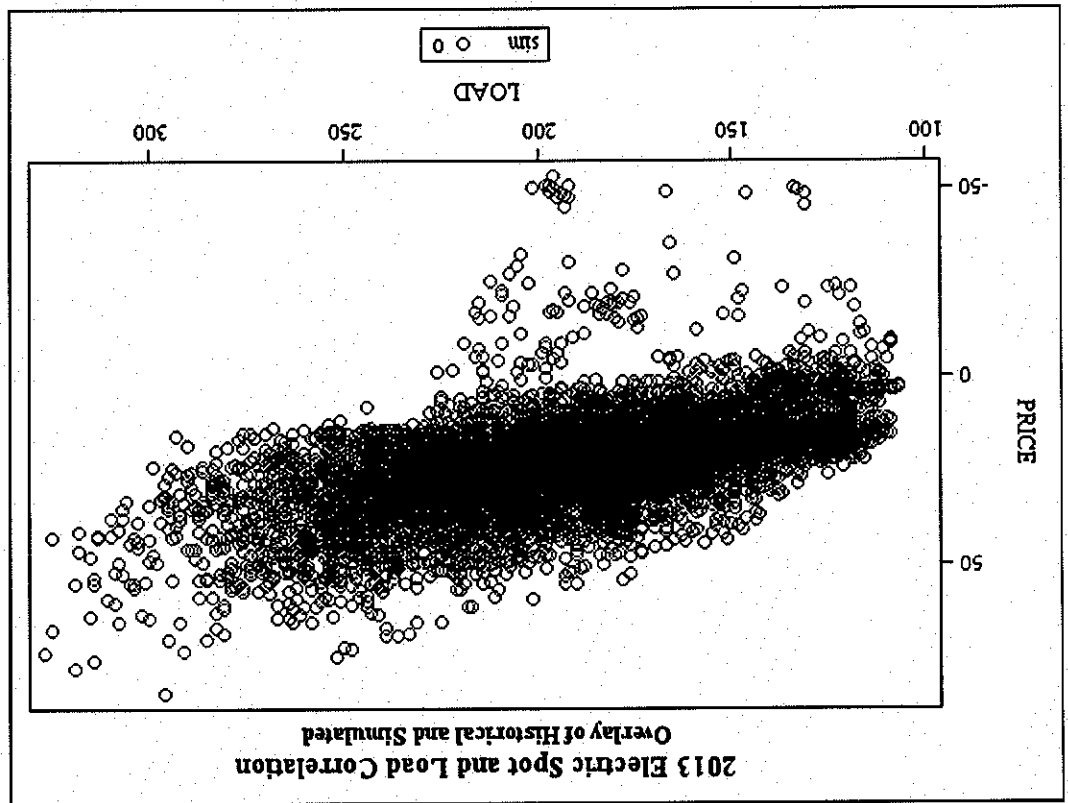
2014 Electric Spot and Load Correlation
Historical

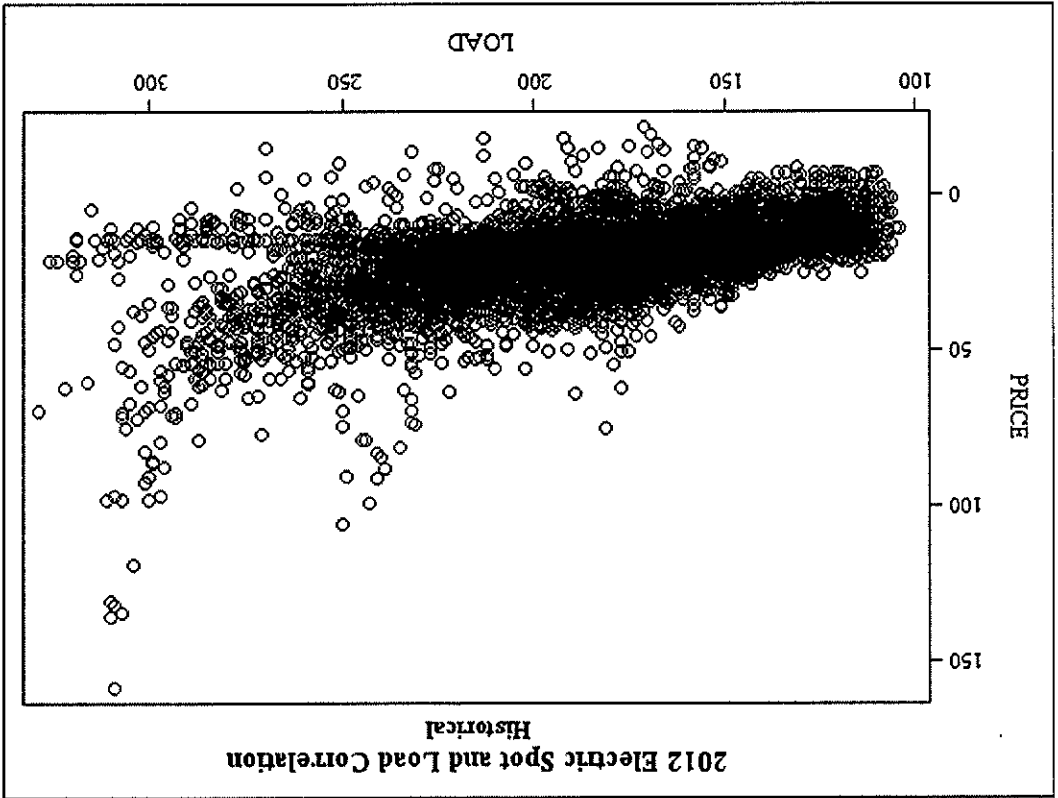


**2014 Electric Spot and Load Correlation
Overlay of Historical and Simulated**

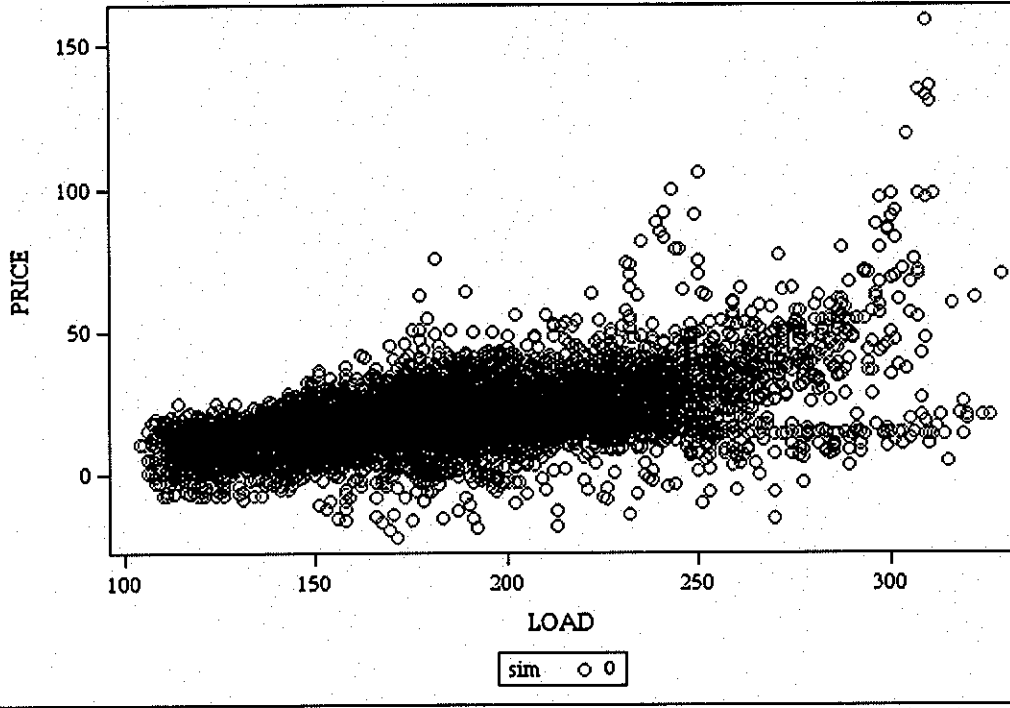


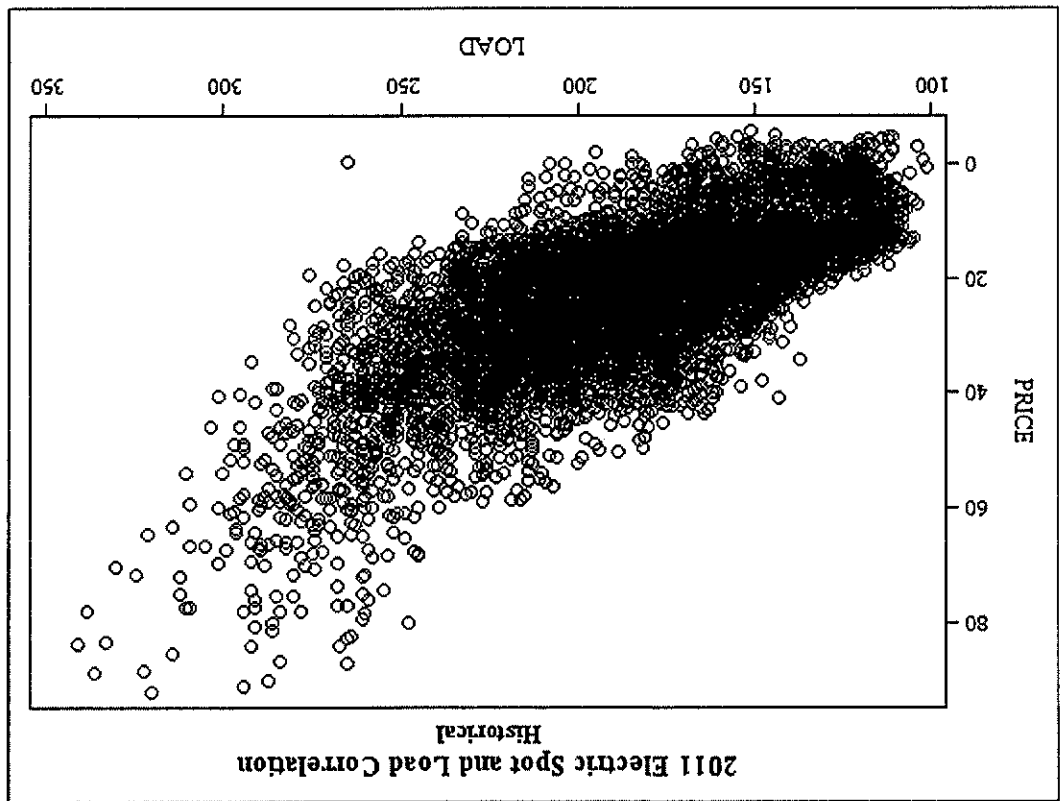




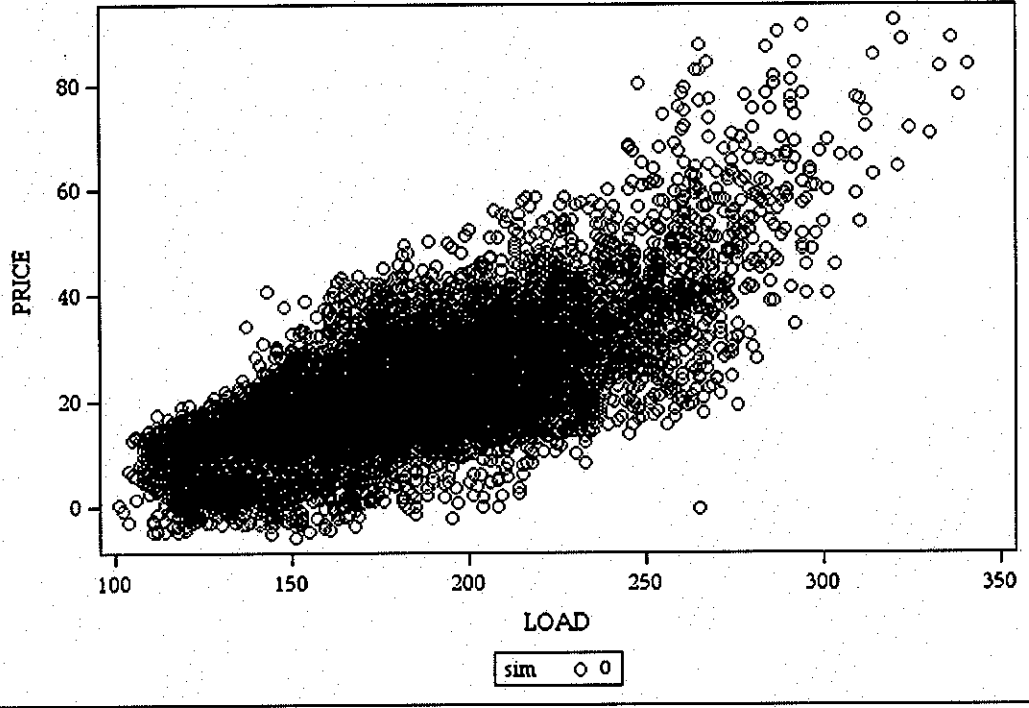


**2012 Electric Spot and Load Correlation
Overlay of Historical and Simulated**

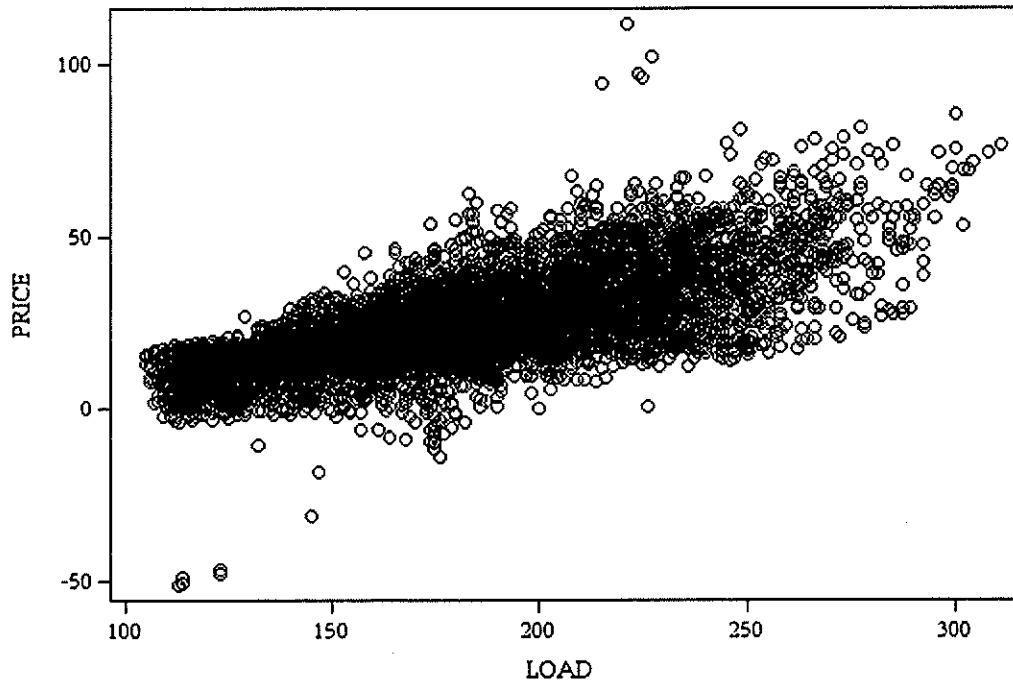




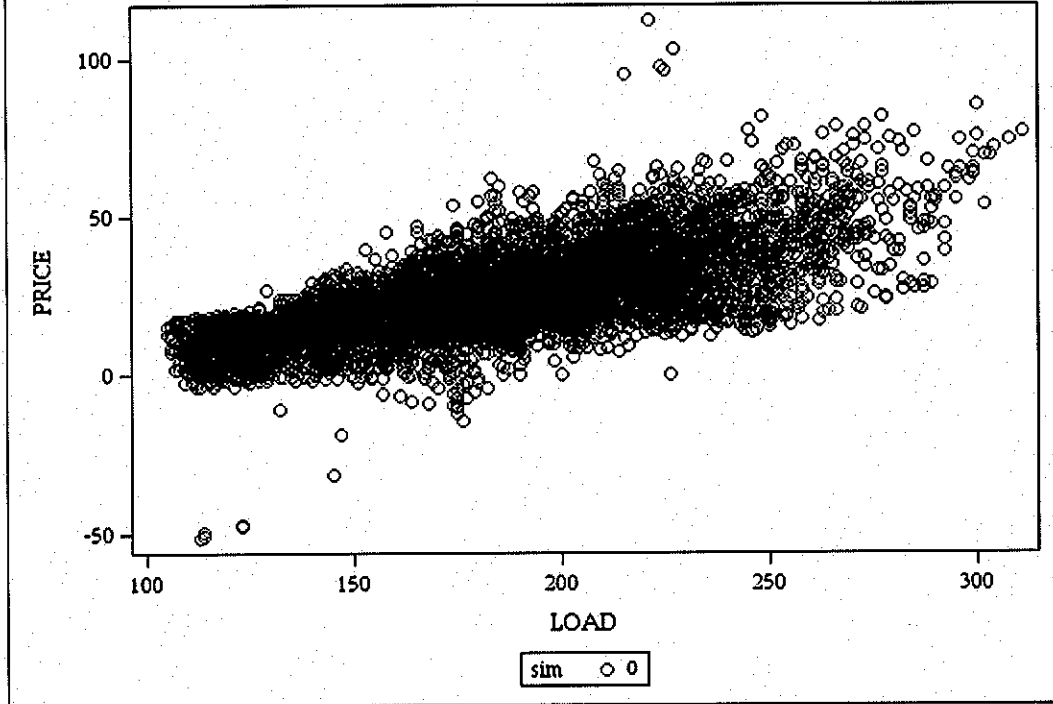
**2011 Electric Spot and Load Correlation
Overlay of Historical and Simulated**



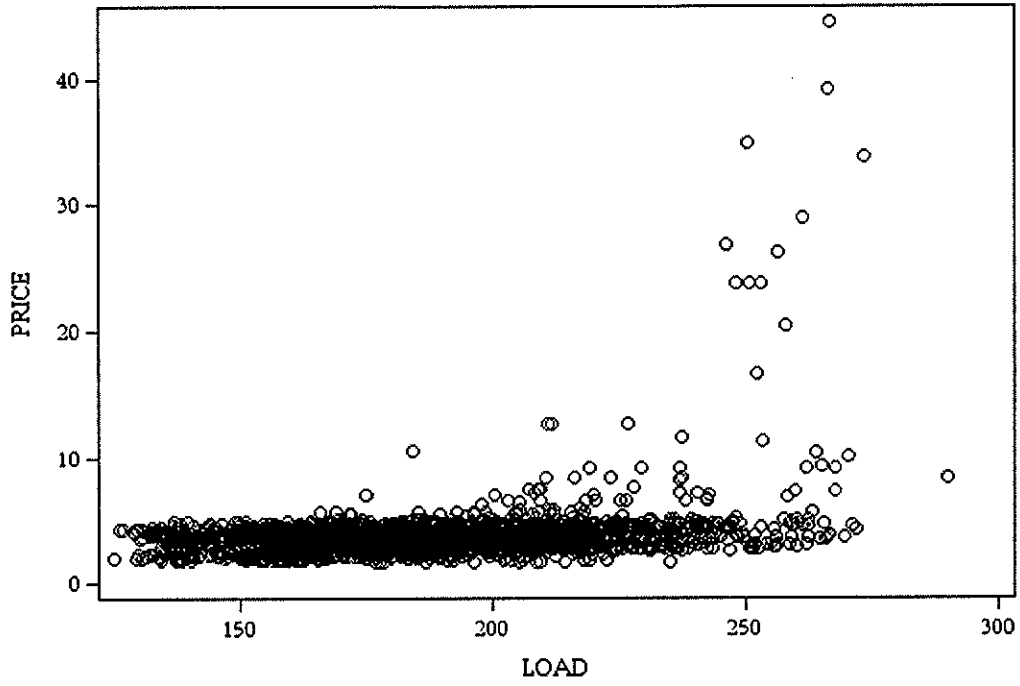
2010 Electric Spot and Load Correlation
Historical

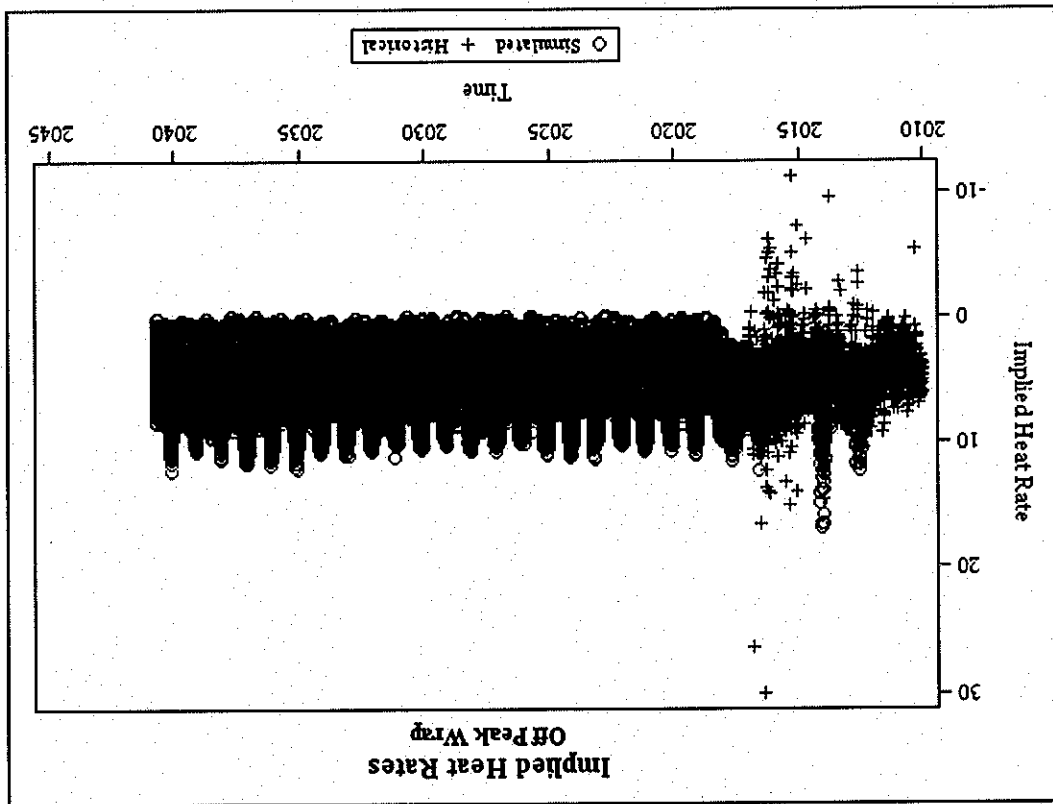


**2010 Electric Spot and Load Correlation
Overlay of Historical and Simulated**

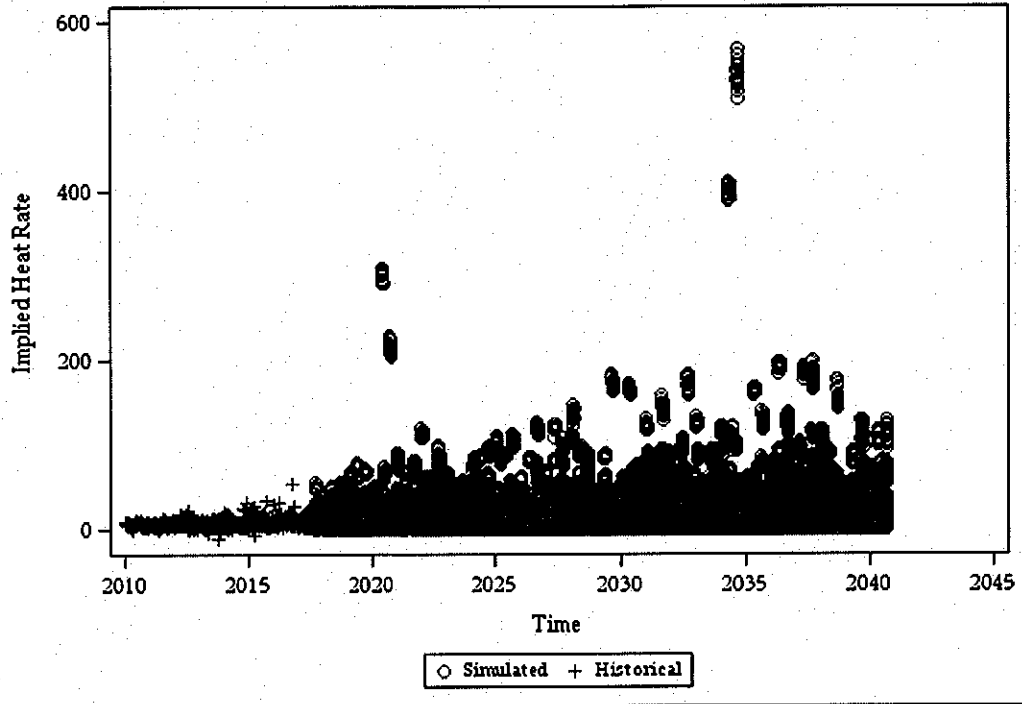


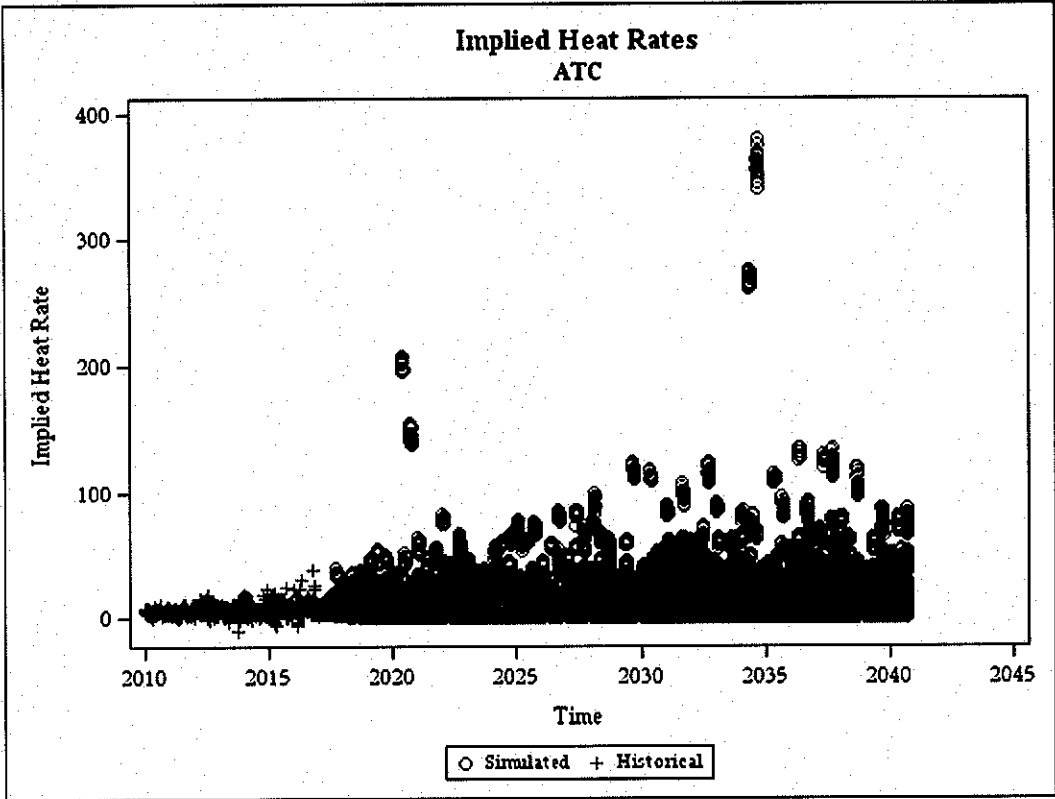
Gas Spot and Load Correlation Historical





Implied Heat Rates 5x16





SDPUC No. EL 16-021

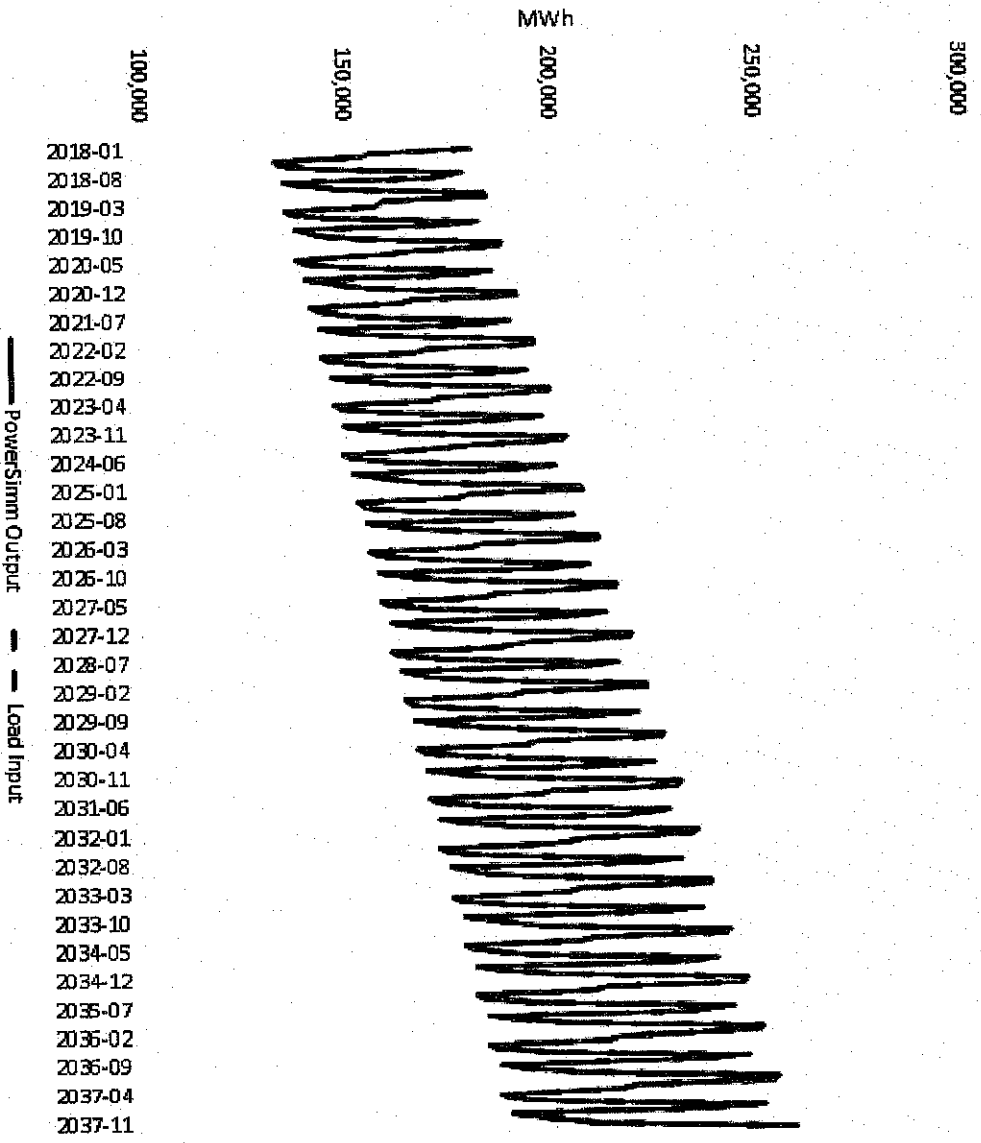
**In the Matter of the Complaint by Consolidated Edison Development, Inc.
Against NorthWestern Corporation d/b/a NorthWestern Energy
For Establishing a Power Purchase Agreement**

**8-1 Attachment - Thermal Dispatch Validation to
NWE Response to Comm Staff's 8th Set of Data Requests**

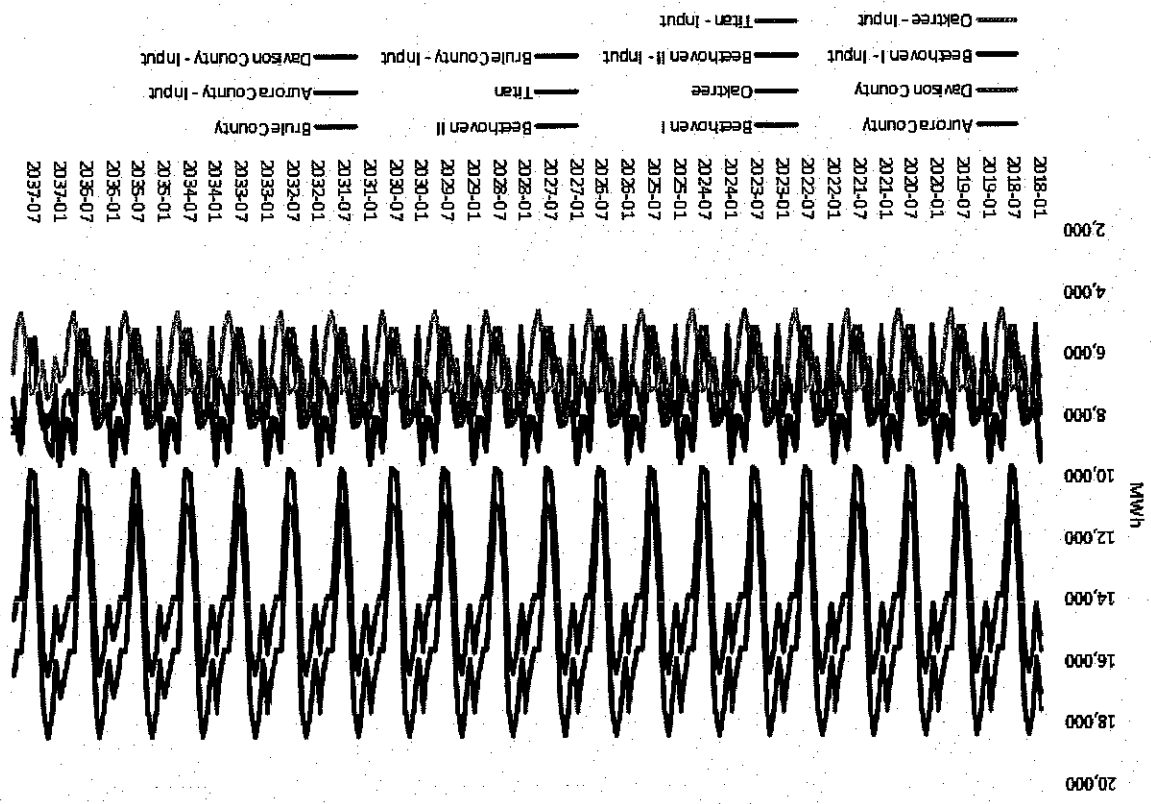
This exhibit is an excel spreadsheet and too large to print.
Please refer to excel file on thumb drive or hard drive to view this exhibit.



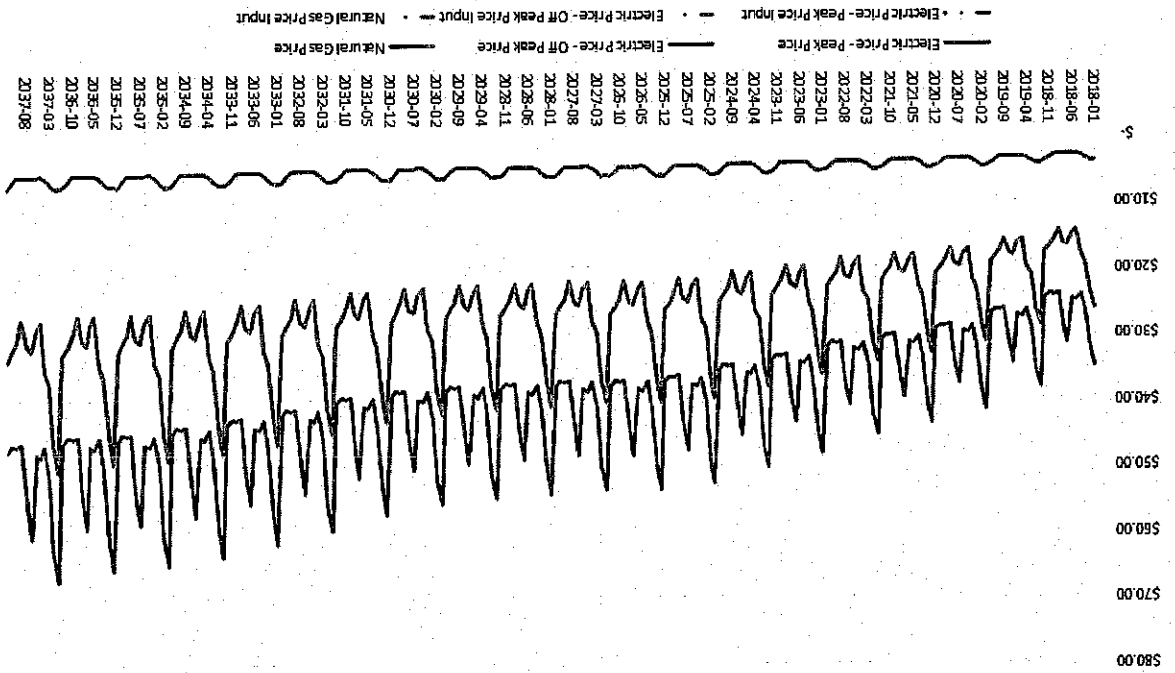
Load Validation



Wind Validation



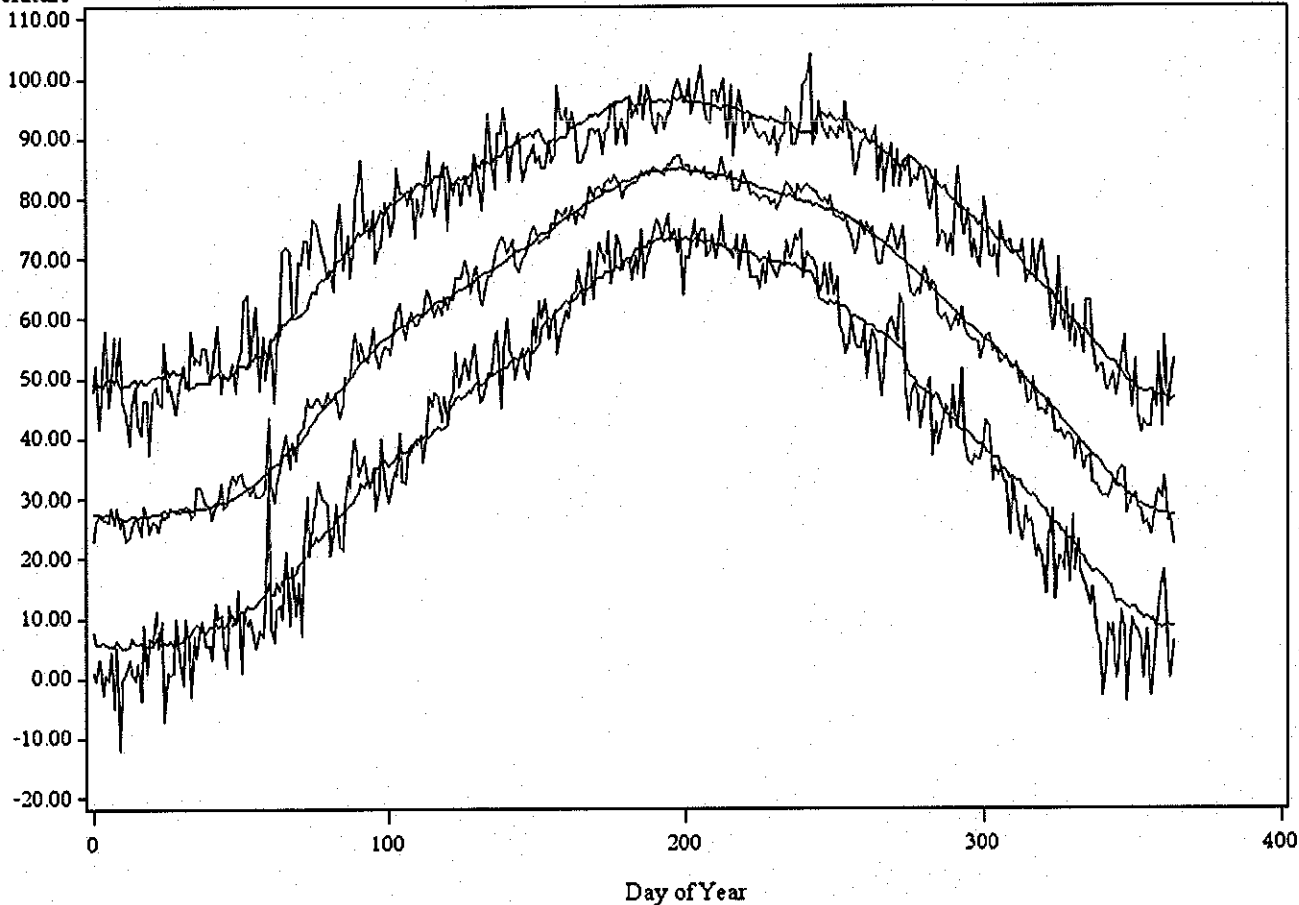
Commodity Price Validation





Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year SIOUX FALLS, SD

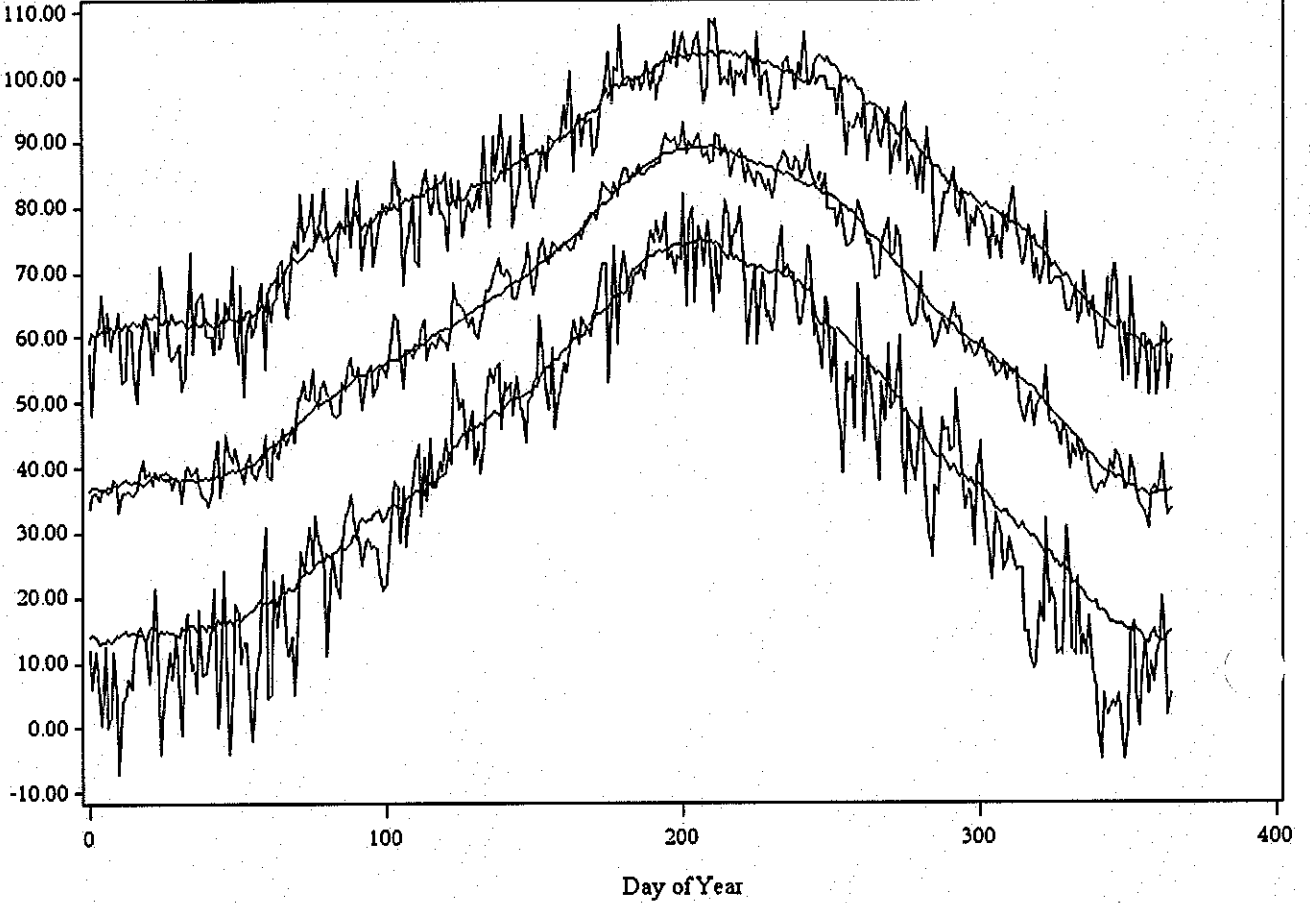
Max Dry Bulb Temperature



PLOT	— Simulated P5	— Simulated Mean	— Simulated P95
	— Historical P5	— Historical Mean	— Historical P95

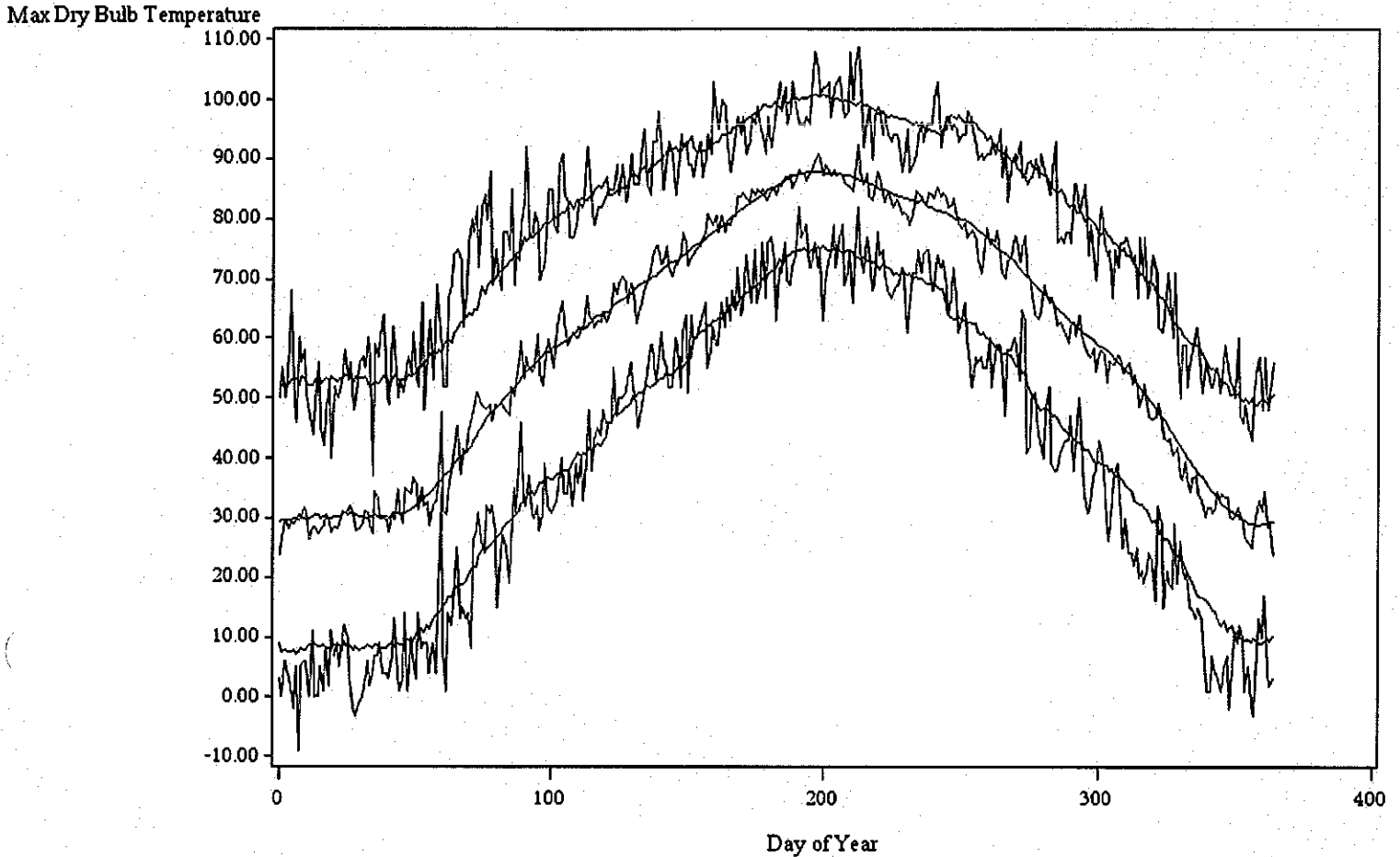
Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year RAPID CITY, SD

Max Dry Bulb Temperature



PLOT	— Simulated P5	— Simulated Mean	— Simulated P95
	— Historical P5	— Historical Mean	— Historical P95

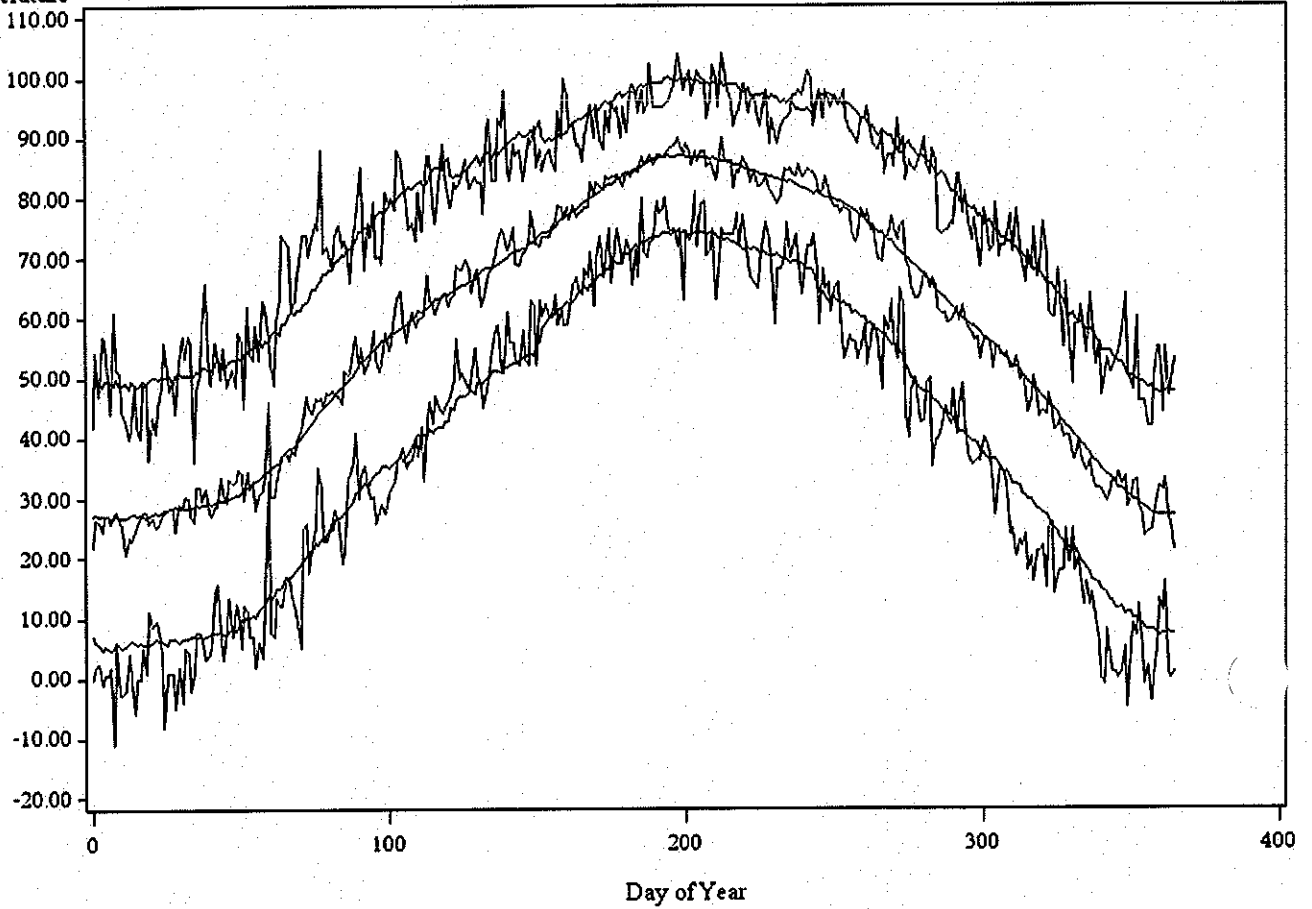
Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year MITCHELL, SD



PLOT	—	Simulated P5	—	Simulated Mean	—	Simulated P95
	—	Historical P5	—	Historical Mean	—	Historical P95

Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year HURON, SD

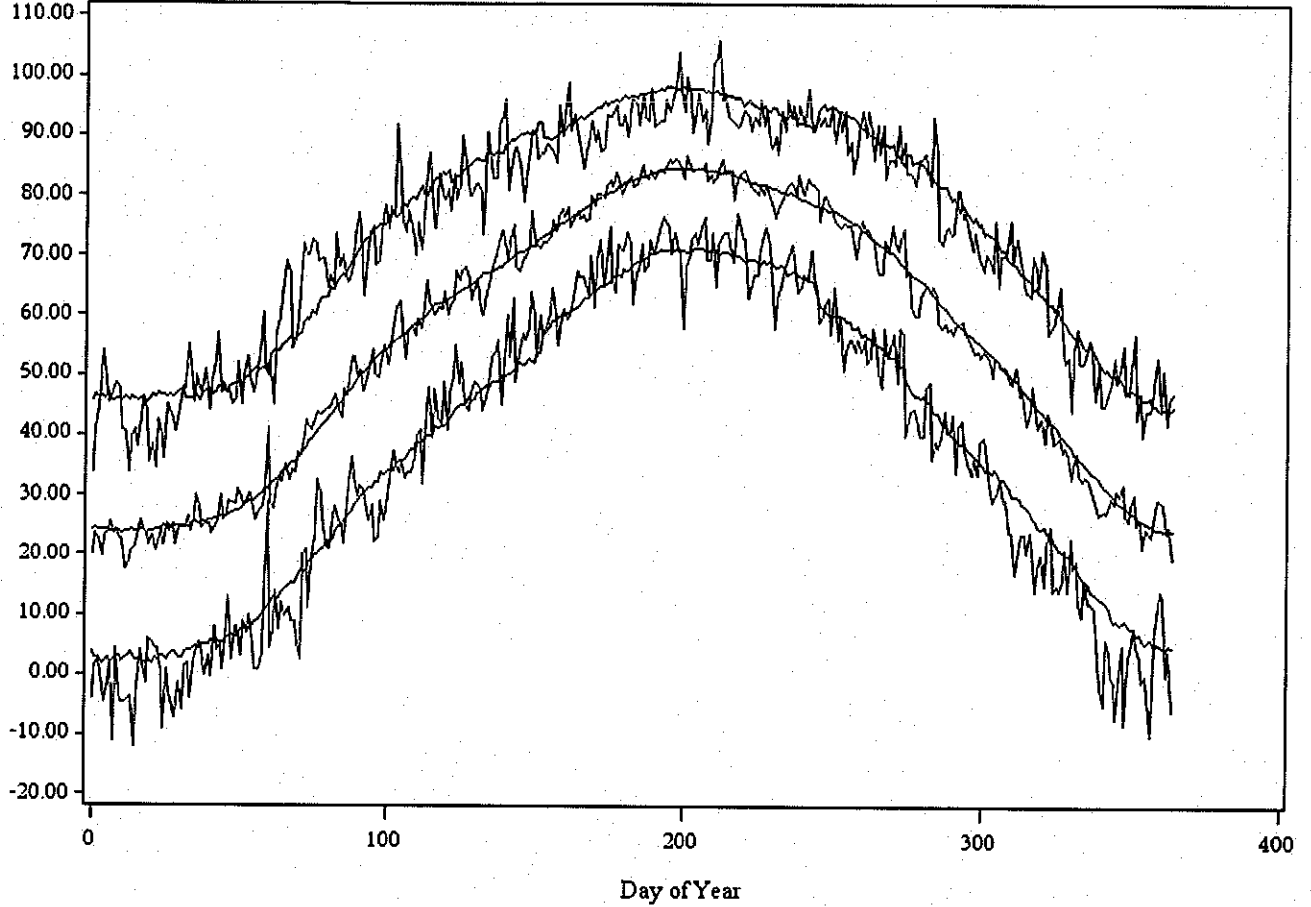
Max Dry Bulb Temperature



PLOT	— Simulated P5	— Simulated Mean	— Simulated P95
	— Historical P5	— Historical Mean	— Historical P95

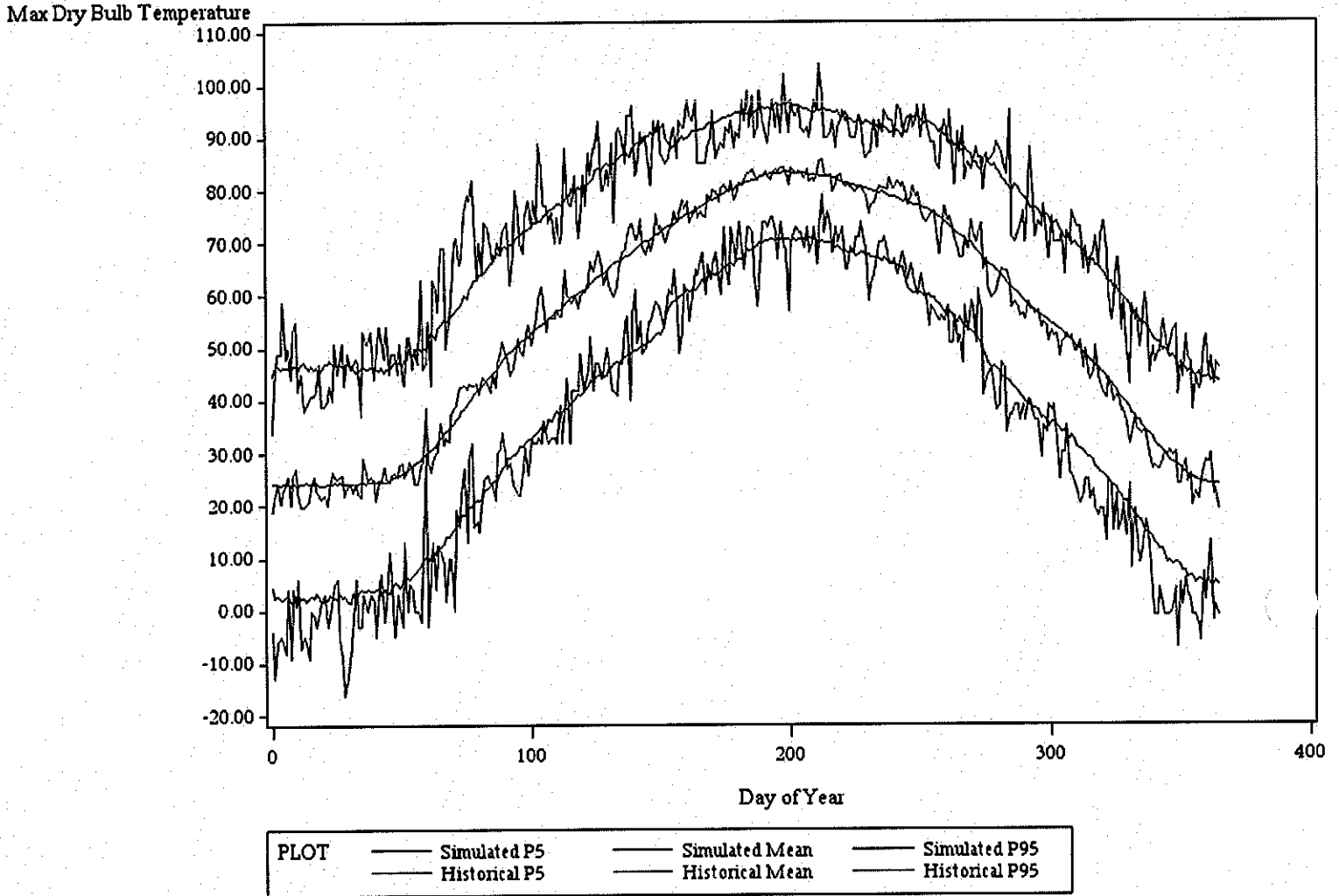
Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year ABERDEEN, SD

Max Dry Bulb Temperature

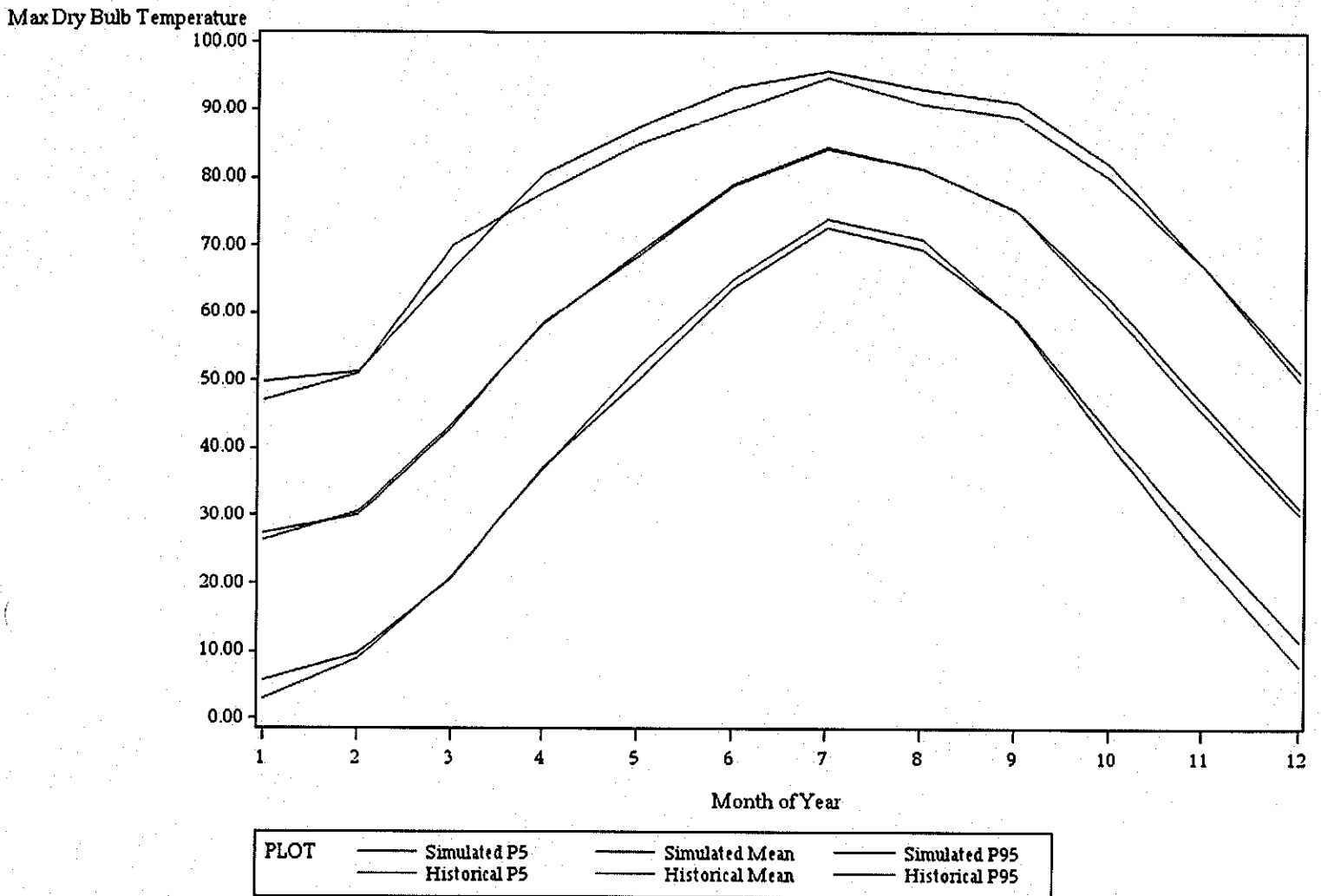


PLOT	—	Simulated P5	—	Simulated Mean	—	Simulated P95
	—	Historical P5	—	Historical Mean	—	Historical P95

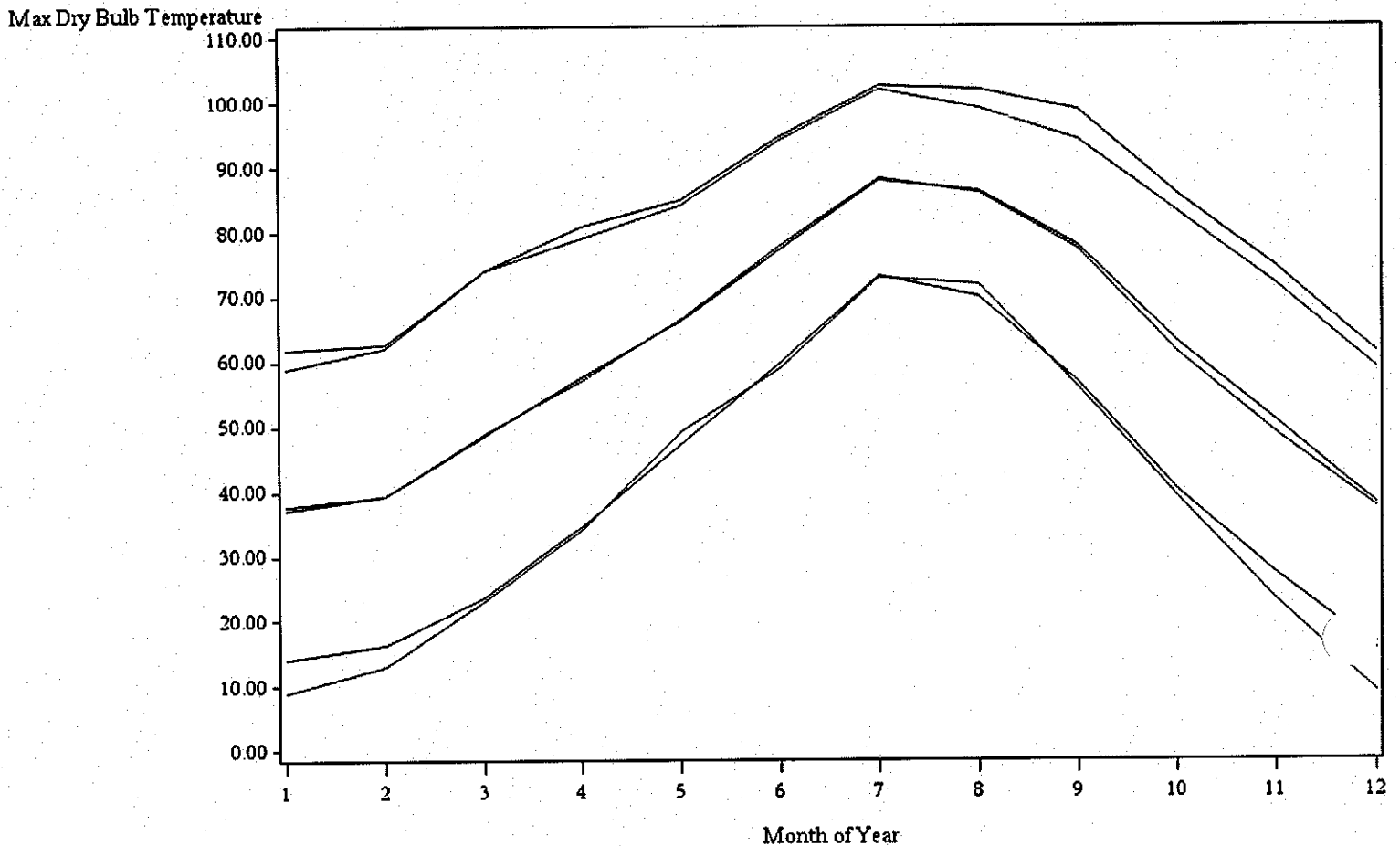
Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year SISSETON, SD



Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year SIOUX FALLS, SD

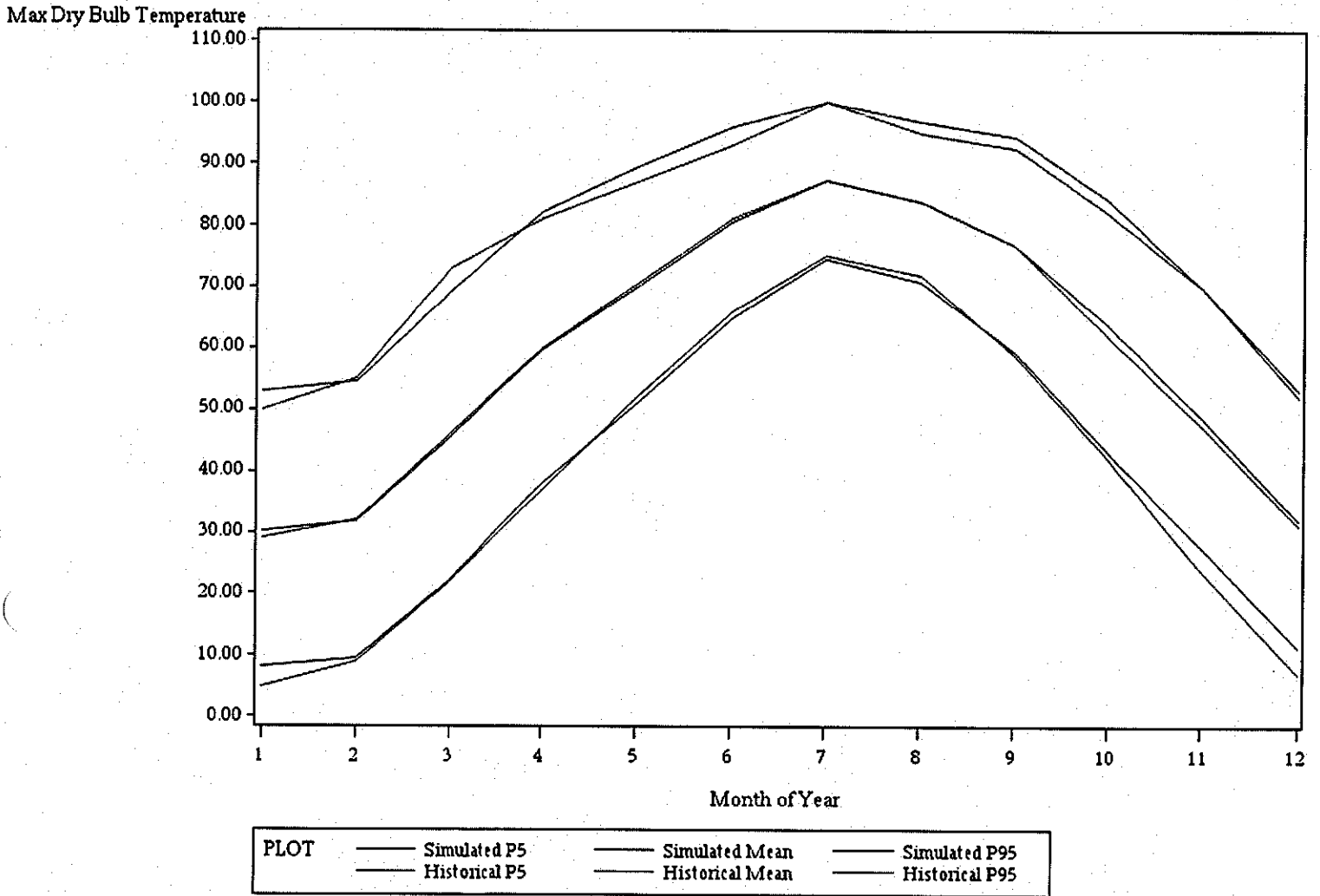


Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year RAPID CITY, SD

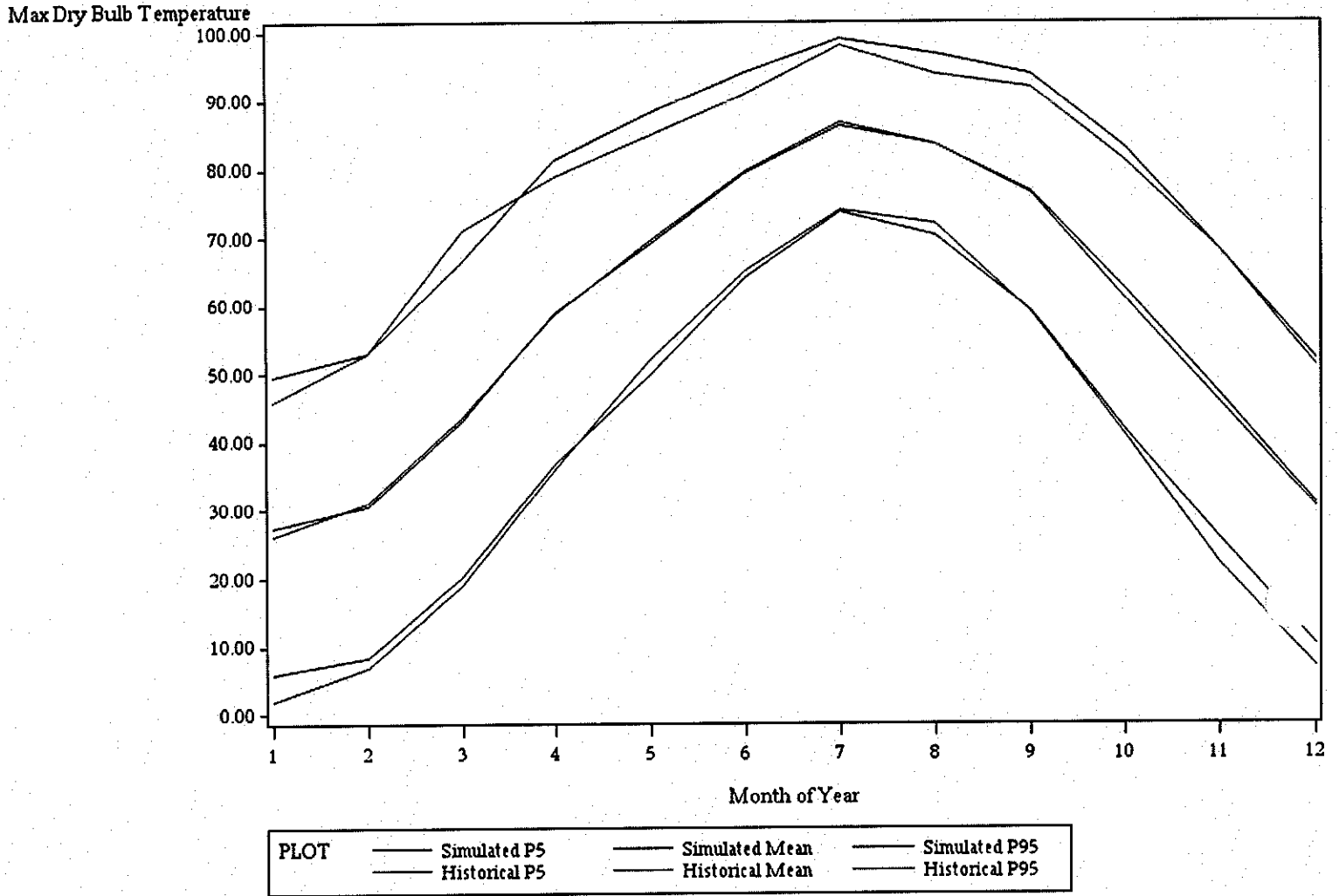


PLOT	Simulated P5	Simulated Mean	Simulated P95
	Historical P5	Historical Mean	Historical P95

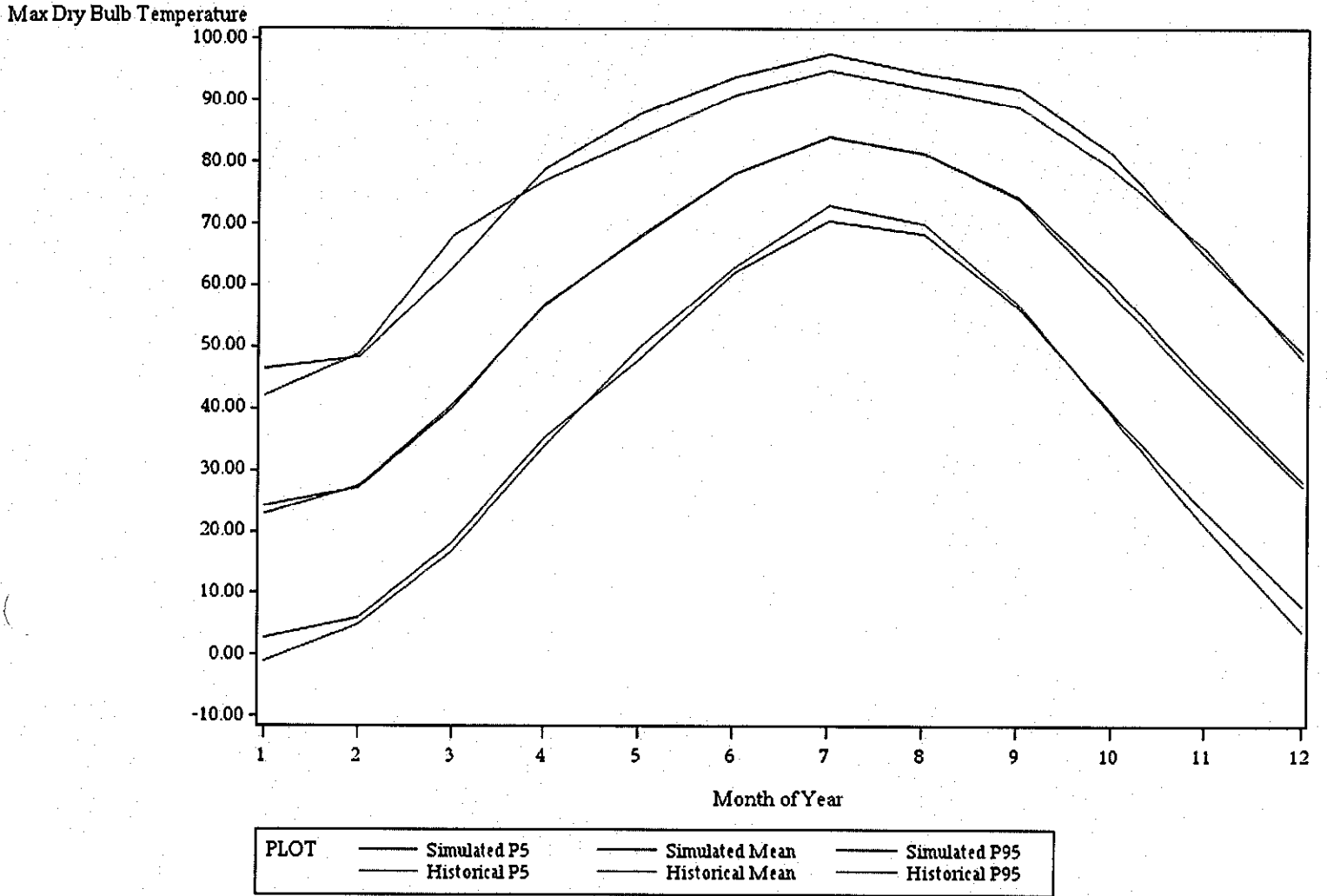
Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year MITCHELL, SD



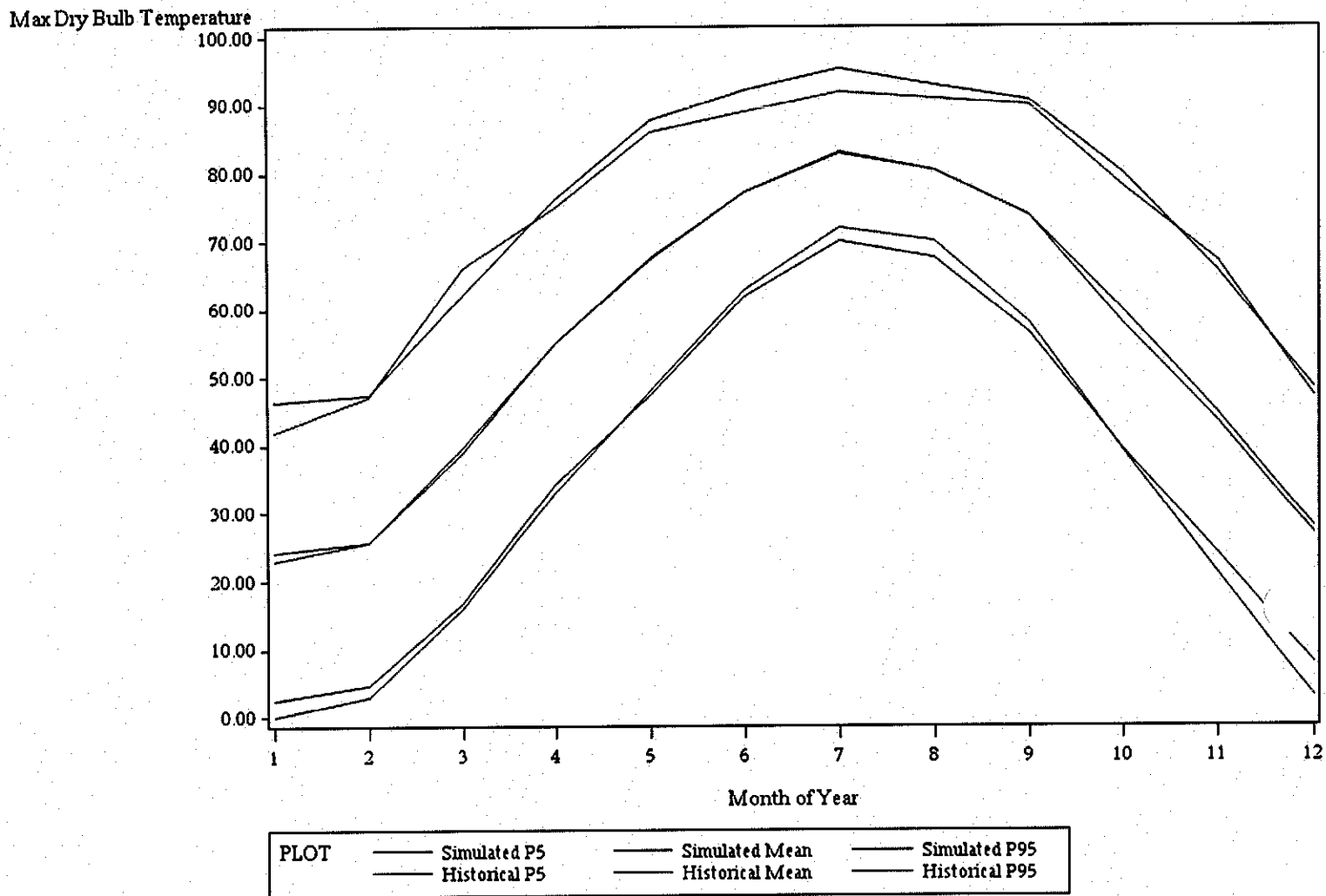
Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year HURON, SD



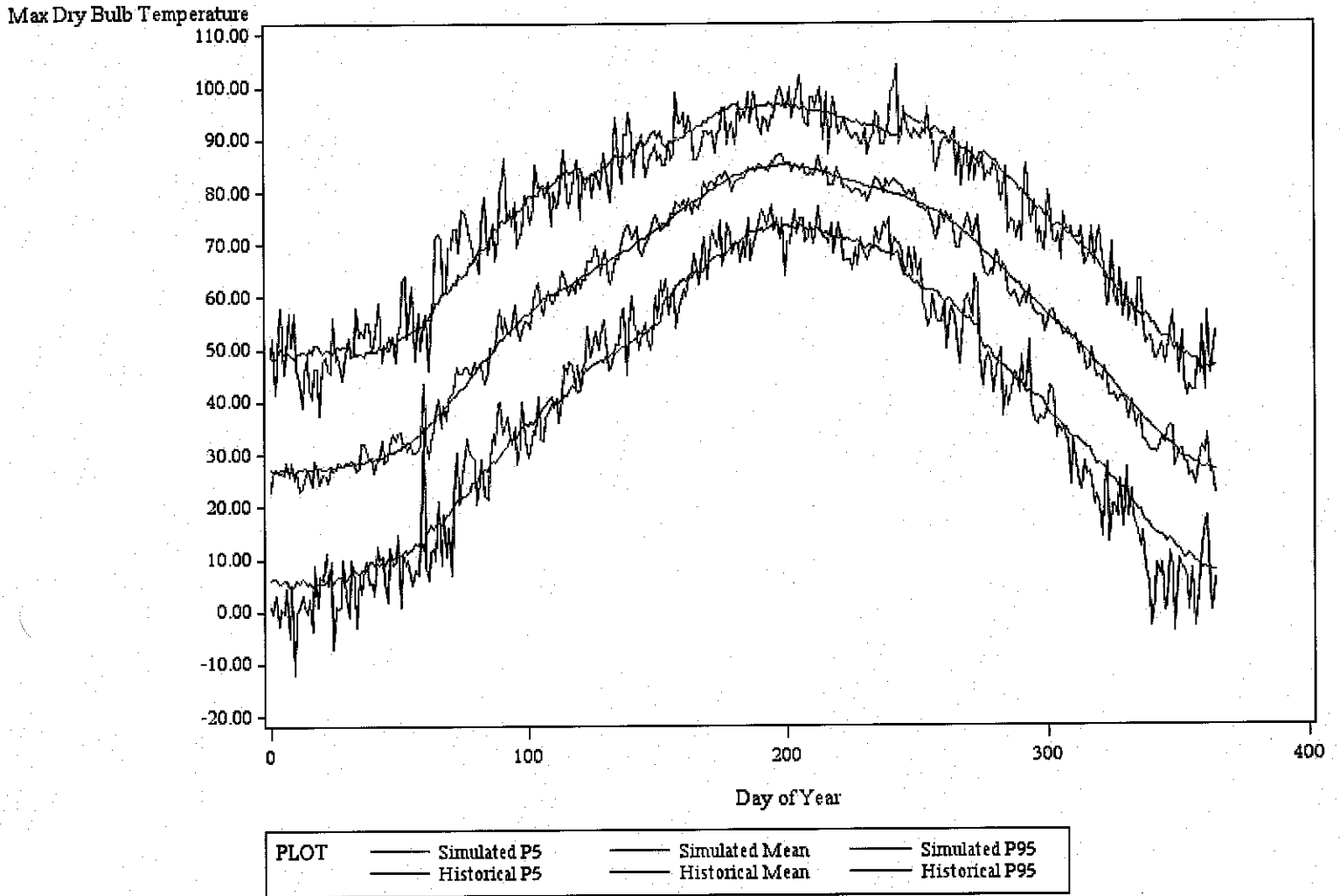
Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year ABERDEEN, SD



Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year SISSETON, SD

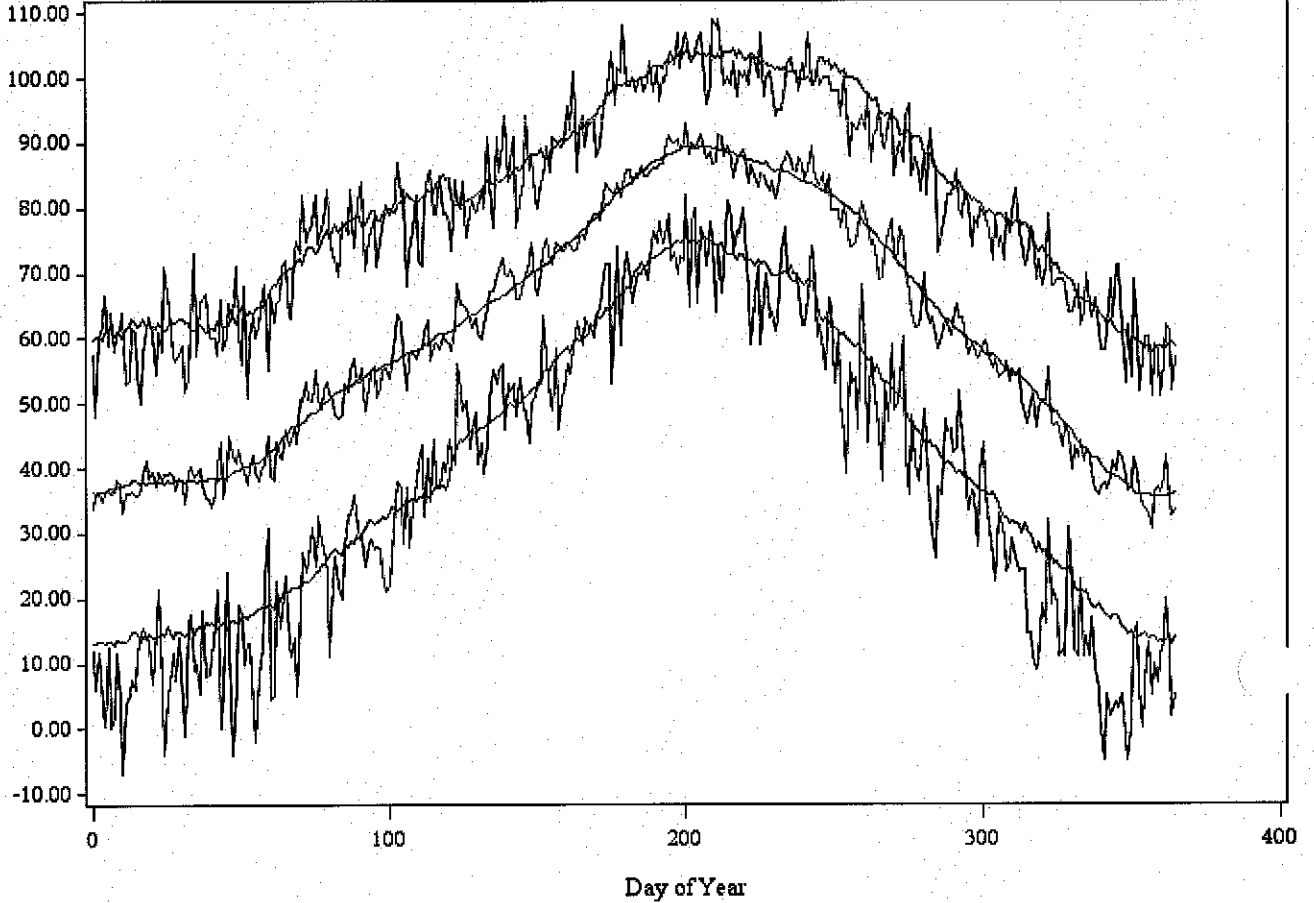


Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year SIOUX FALLS, SD



Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year RAPID CITY, SD

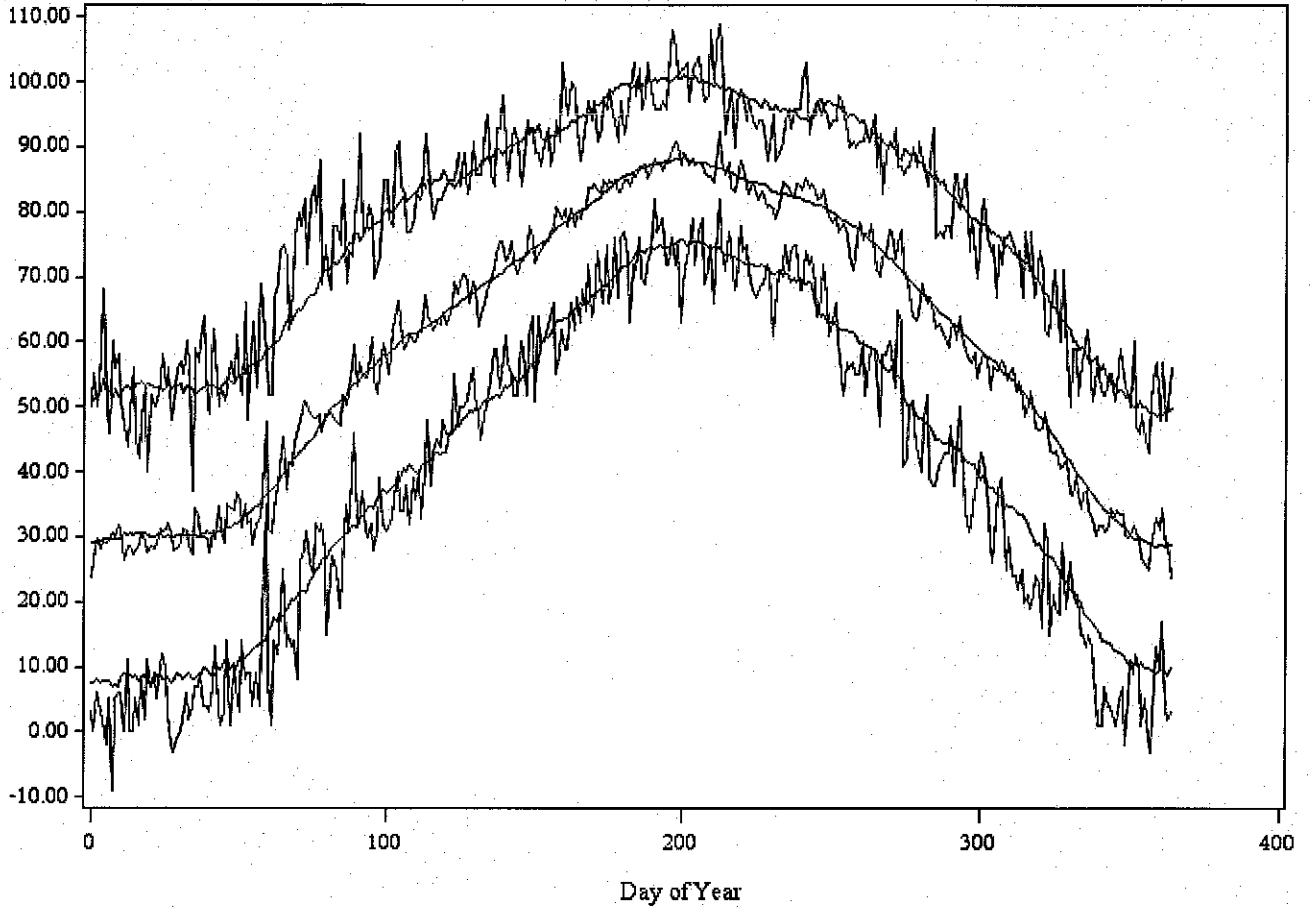
Max Dry Bulb Temperature



PLOT	—	Simulated P5	—	Simulated Mean	—	Simulated P95
	—	Historical P5	—	Historical Mean	—	Historical P95

Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year MITCHELL, SD

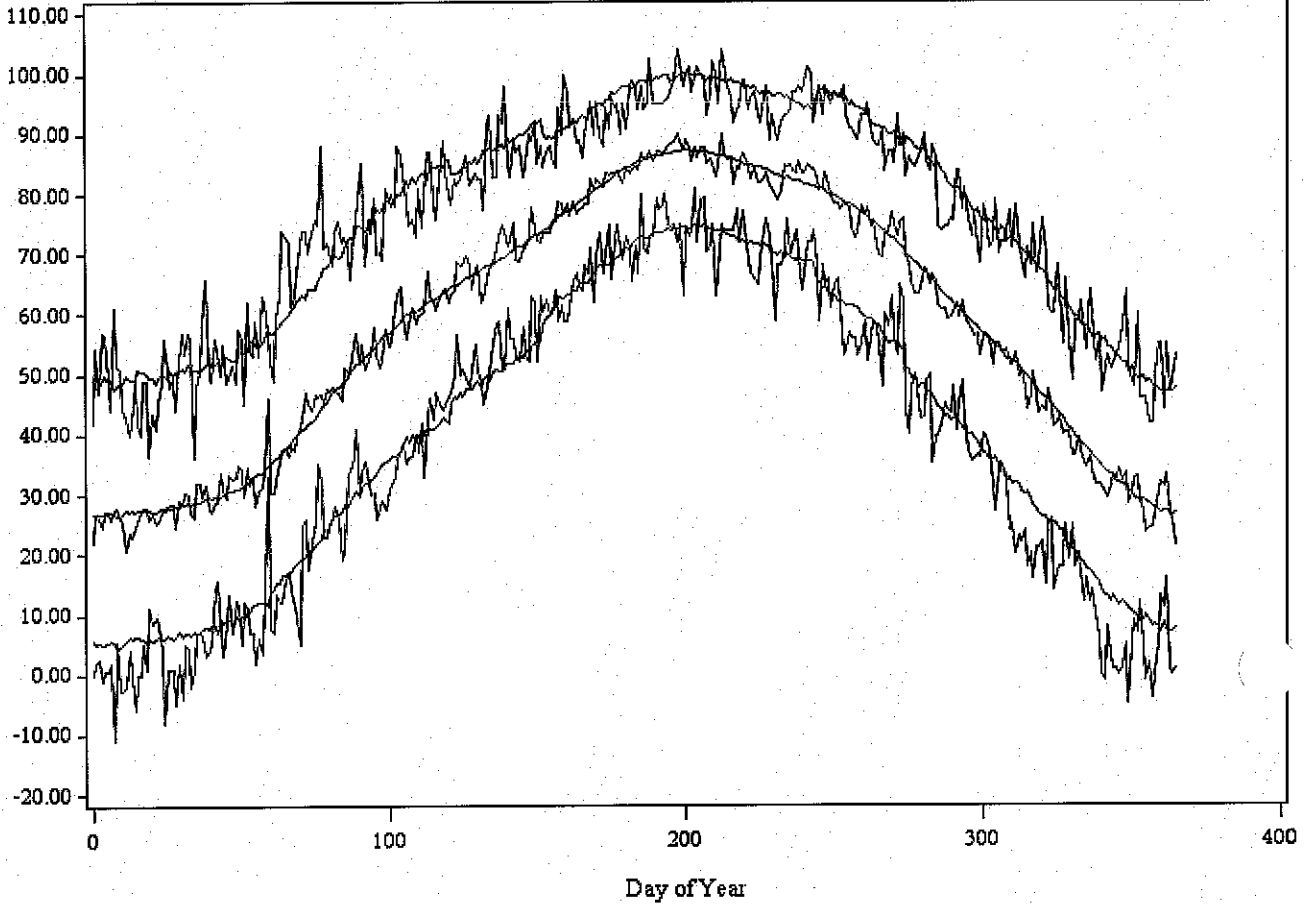
Max Dry Bulb Temperature



PLOT	—	Simulated P5	—	Simulated Mean	—	Simulated P95
	—	Historical P5	—	Historical Mean	—	Historical P95

Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year HURON, SD

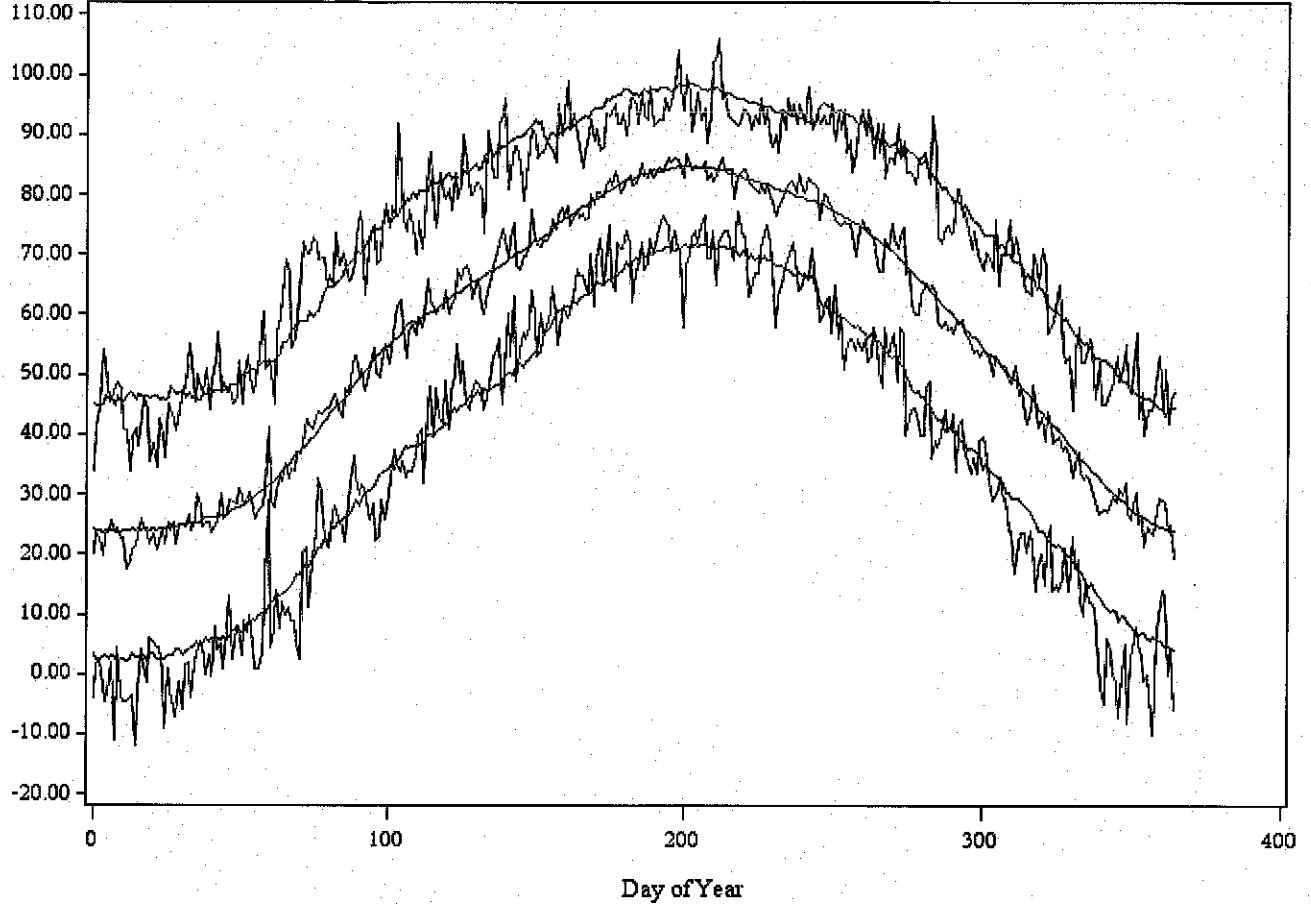
Max Dry Bulb Temperature



PLOT	—	Simulated P5	—	Simulated Mean	—	Simulated P95
	—	Historical P5	—	Historical Mean	—	Historical P95

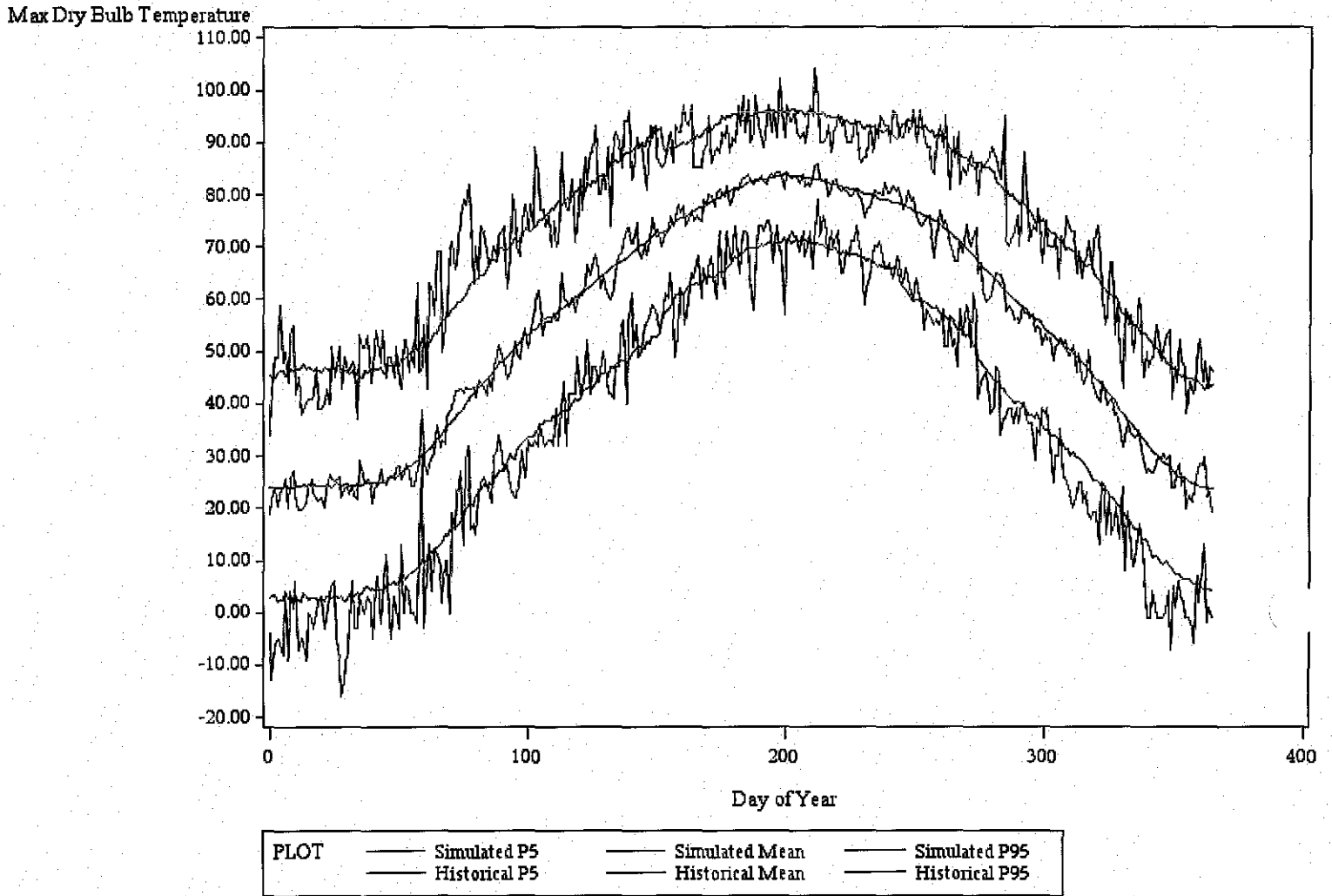
Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year ABERDEEN, SD

Max Dry Bulb Temperature



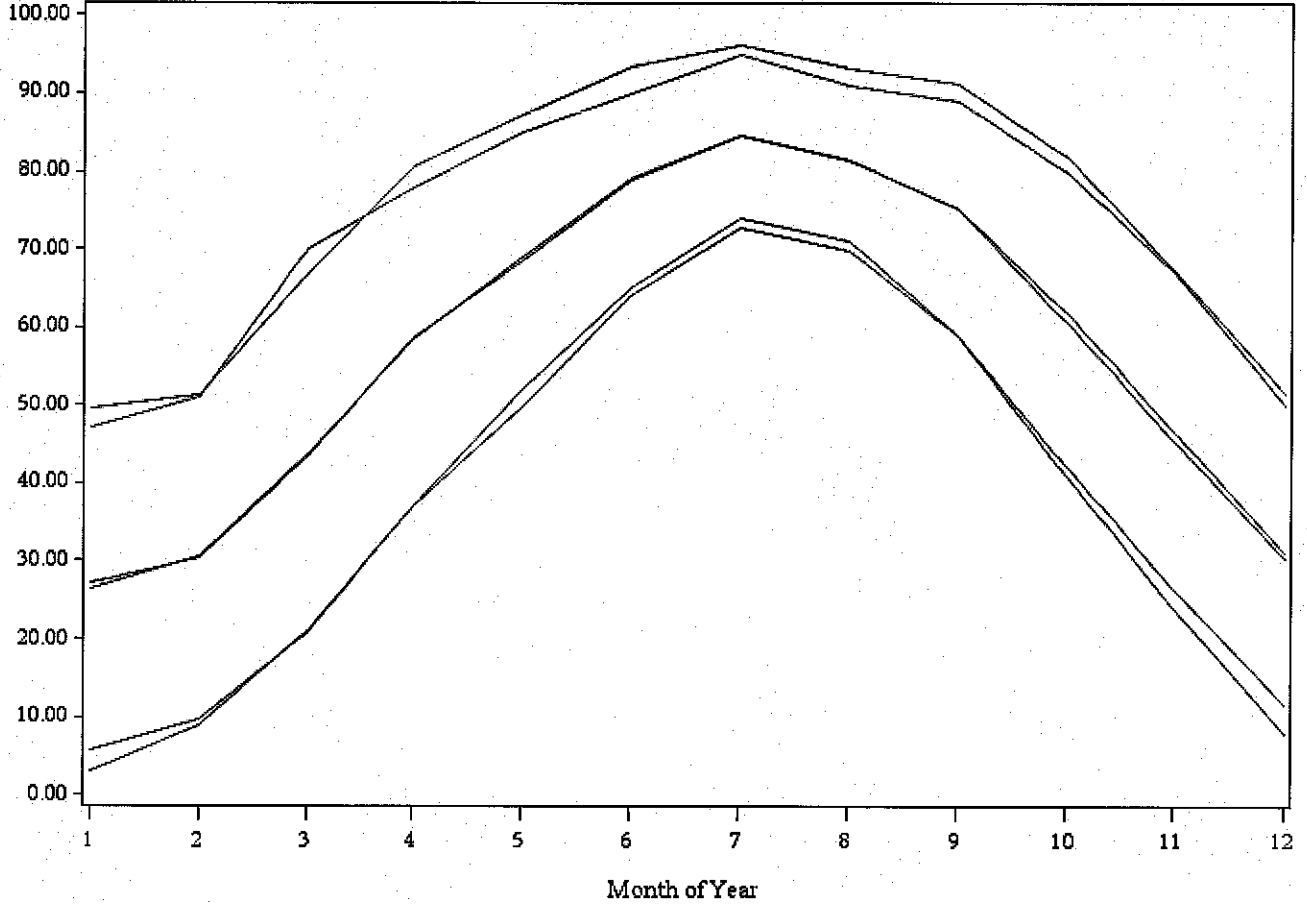
PLOT	—	Simulated P5	—	Simulated Mean	—	Simulated P95
	—	Historical P5	—	Historical Mean	—	Historical P95

Actual vs. Simulated Maximum Drybulb Temperatures by Day of Year SISSETON, SD



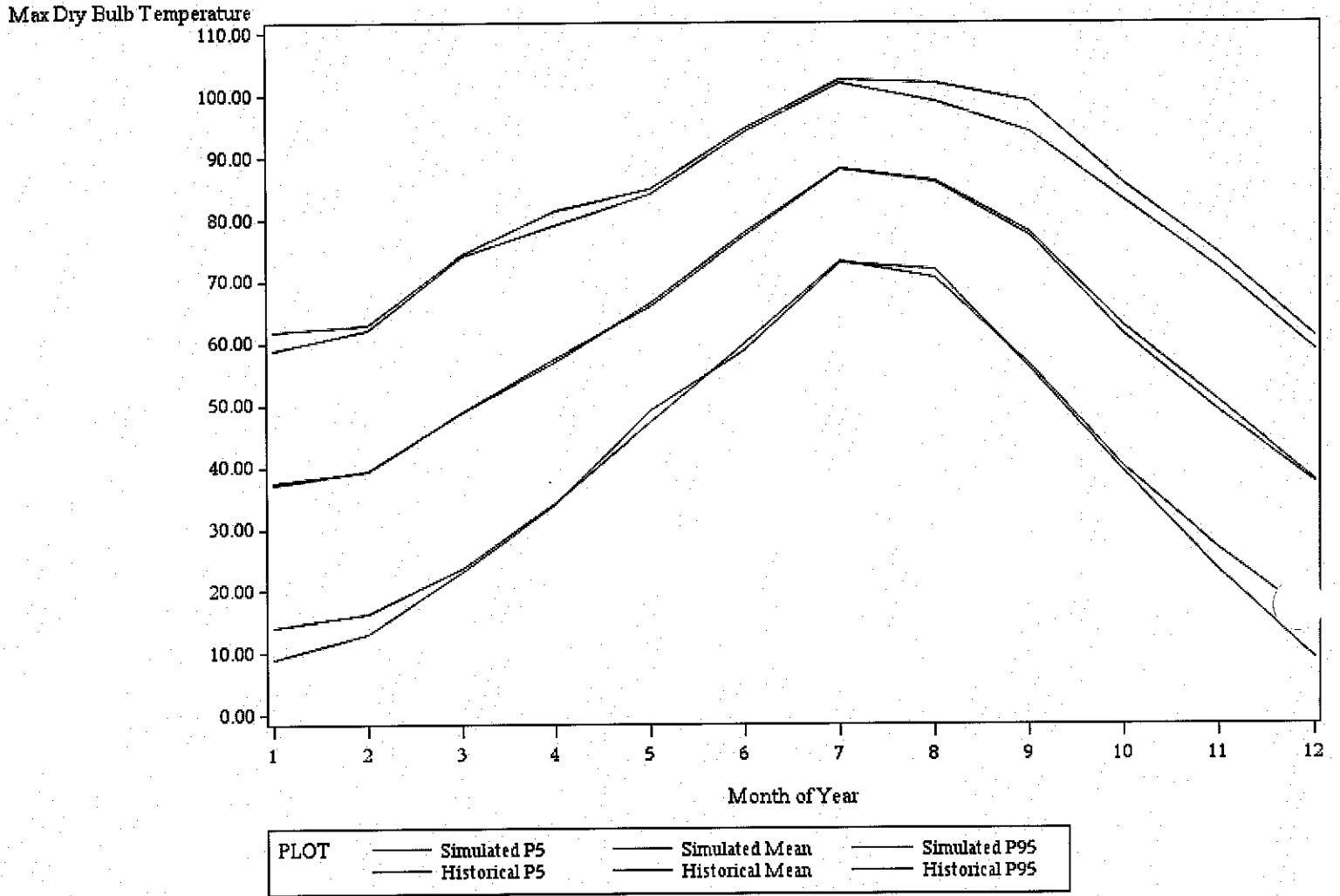
Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year SIOUX FALLS, SD

Max Dry Bulb Temperature

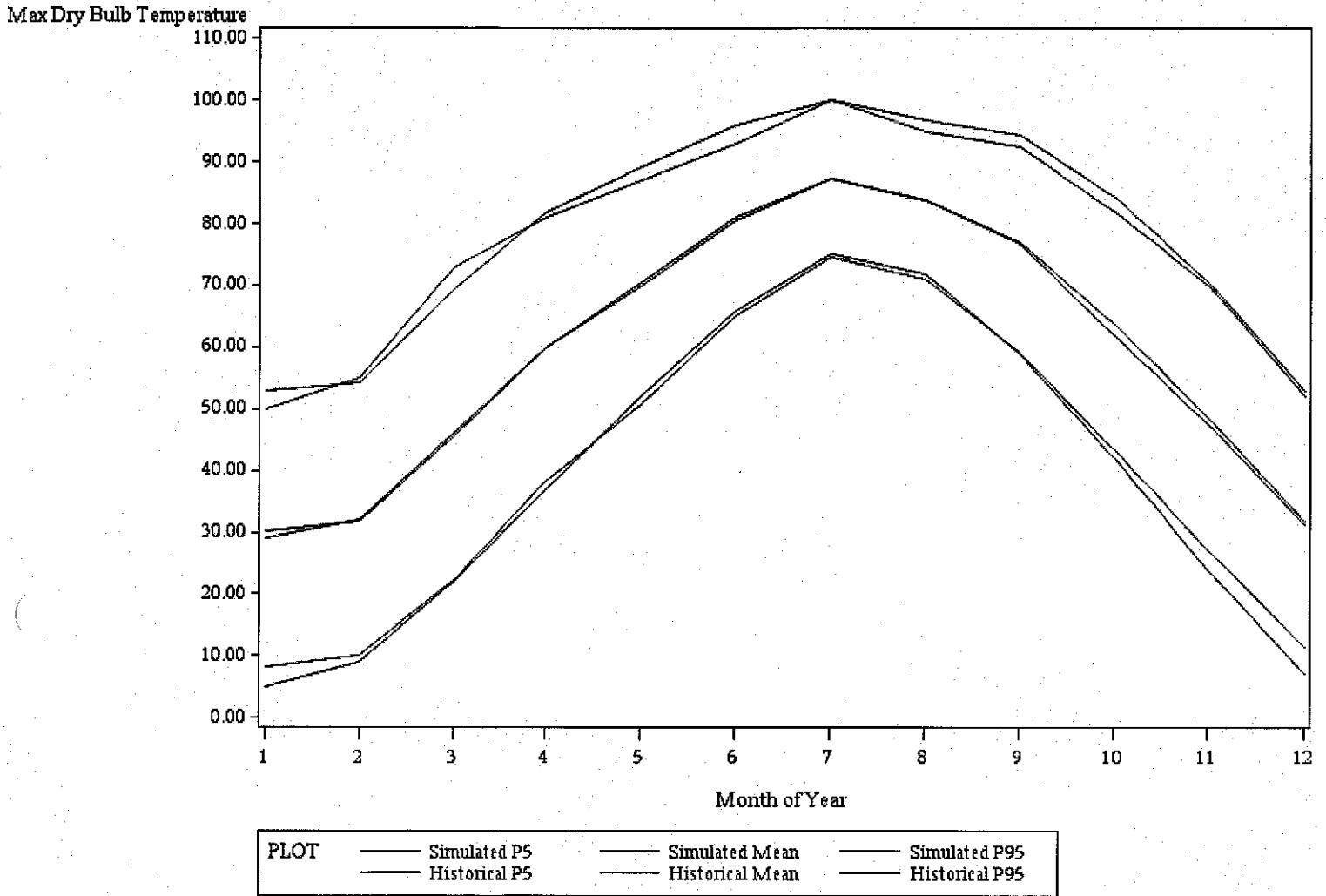


PLOT	Simulated P5	Simulated Mean	Simulated P95
	Historical P5	Historical Mean	Historical P95

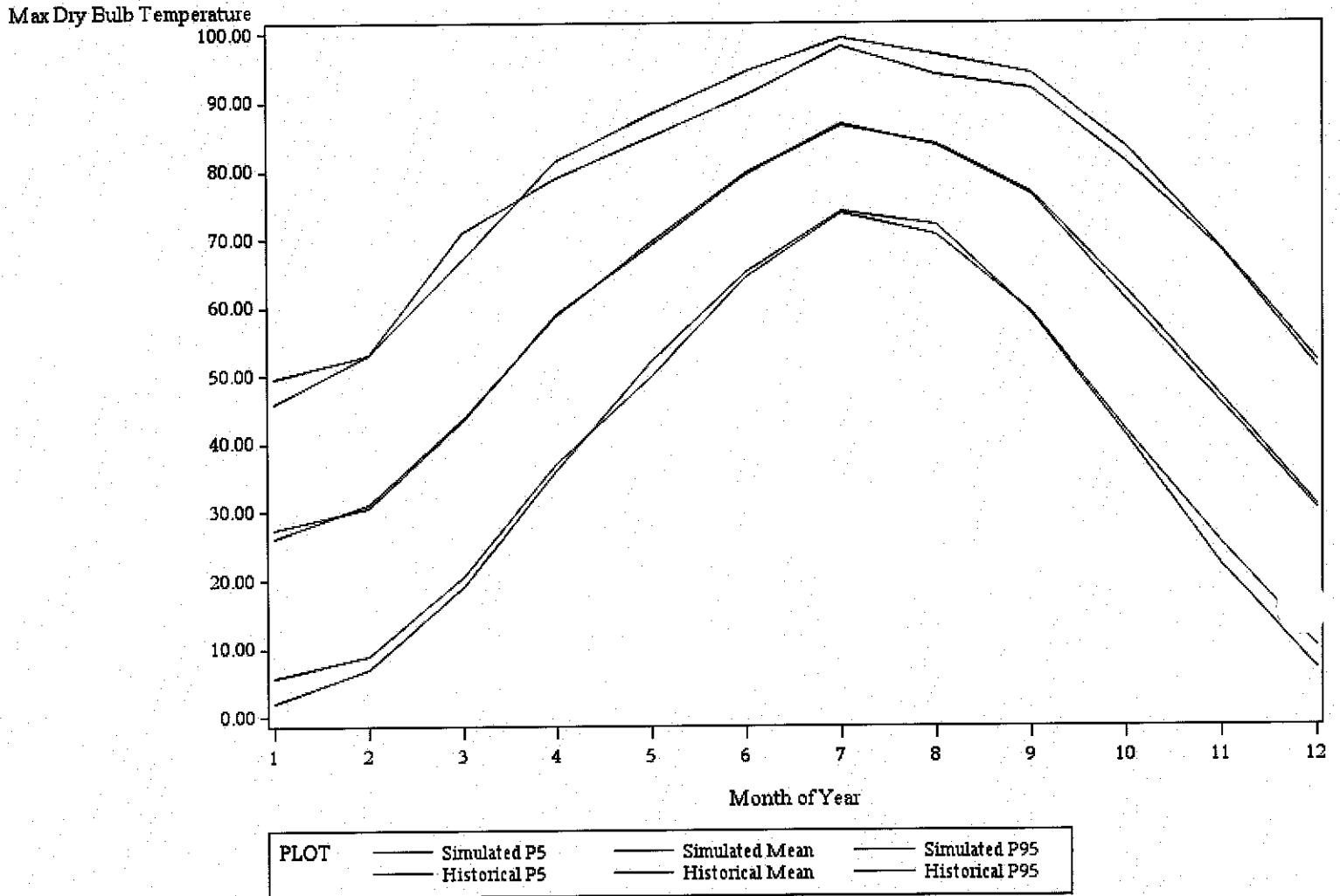
Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year RAPID CITY, SD



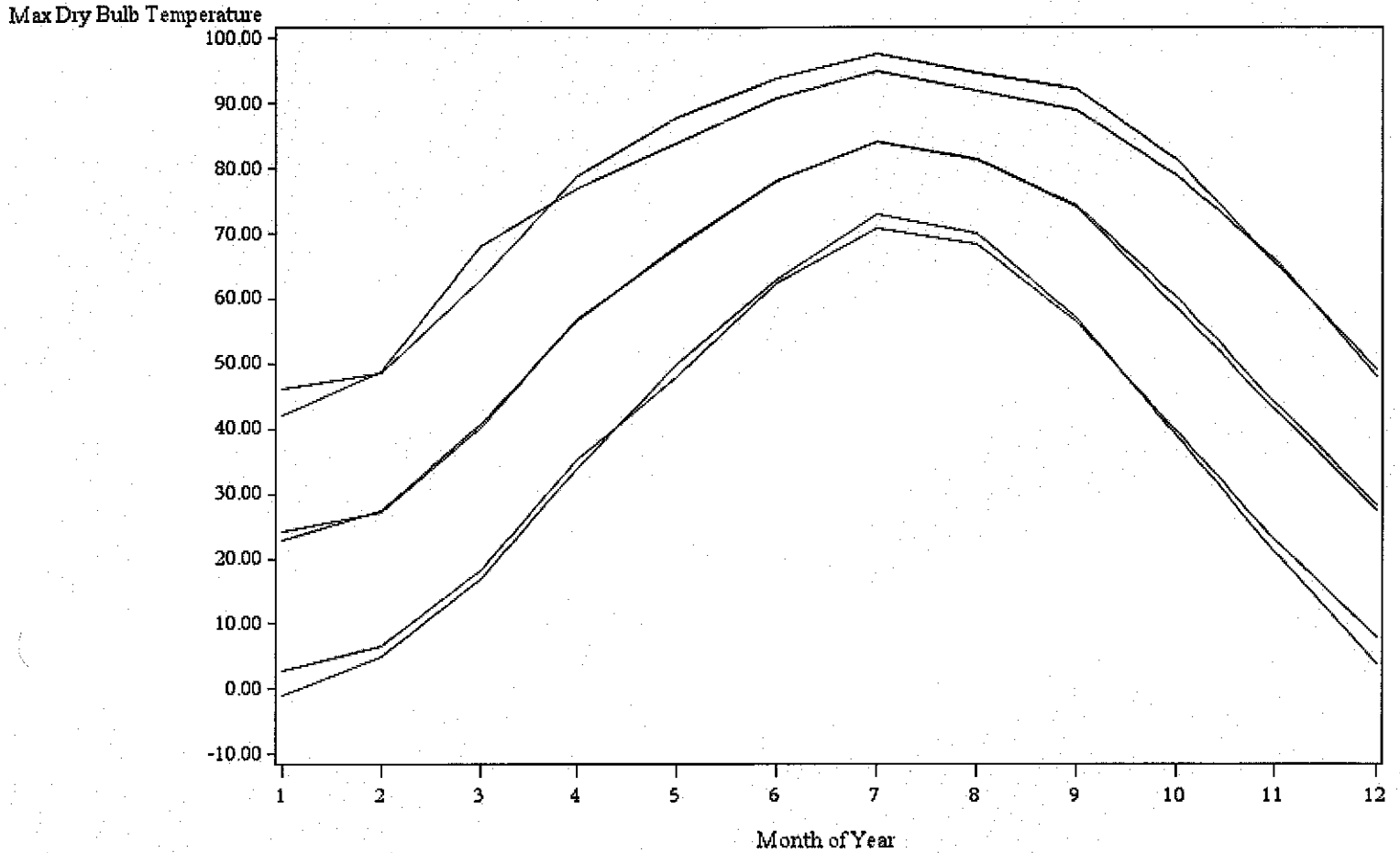
Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year MITCHELL, SD



Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year HURON, SD

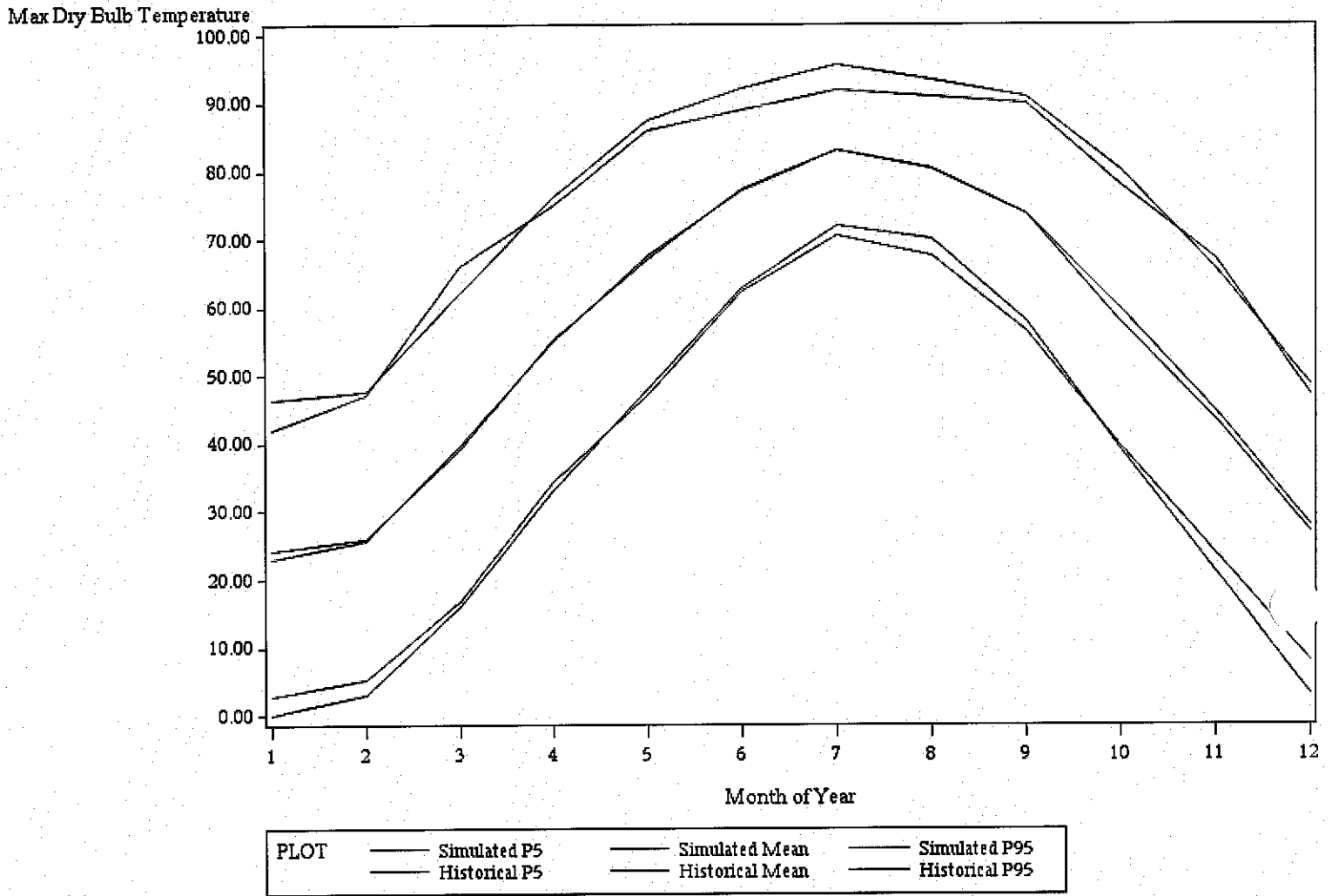


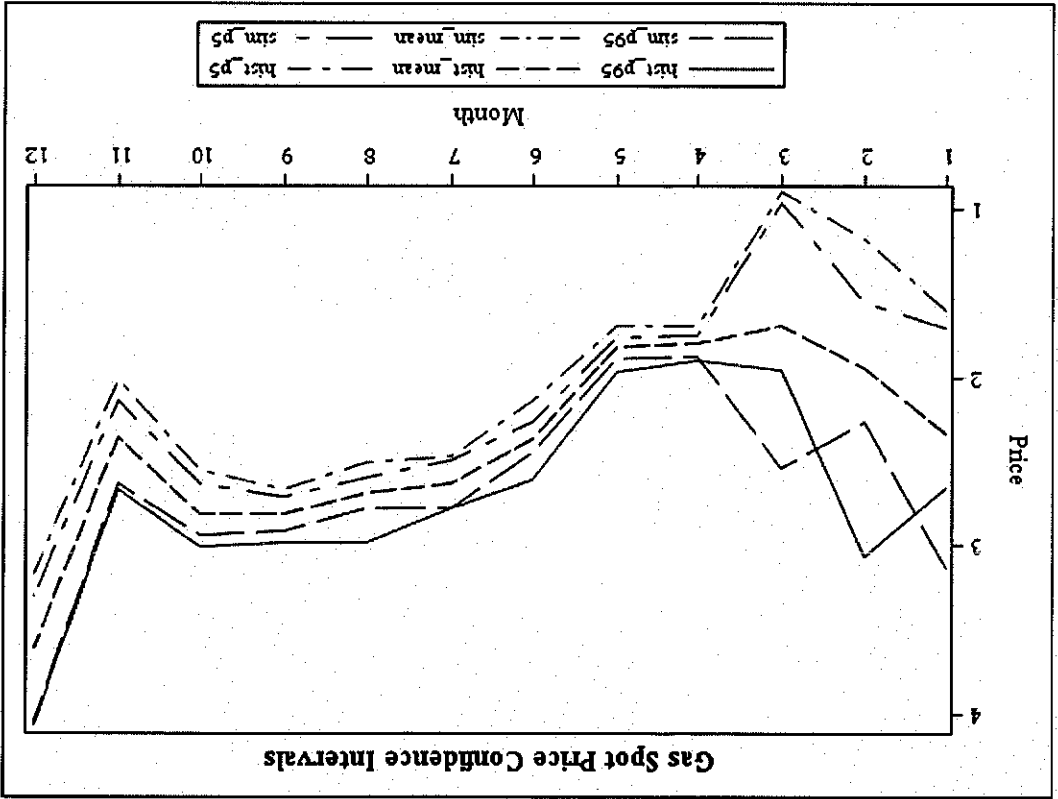
Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year ABERDEEN, SD

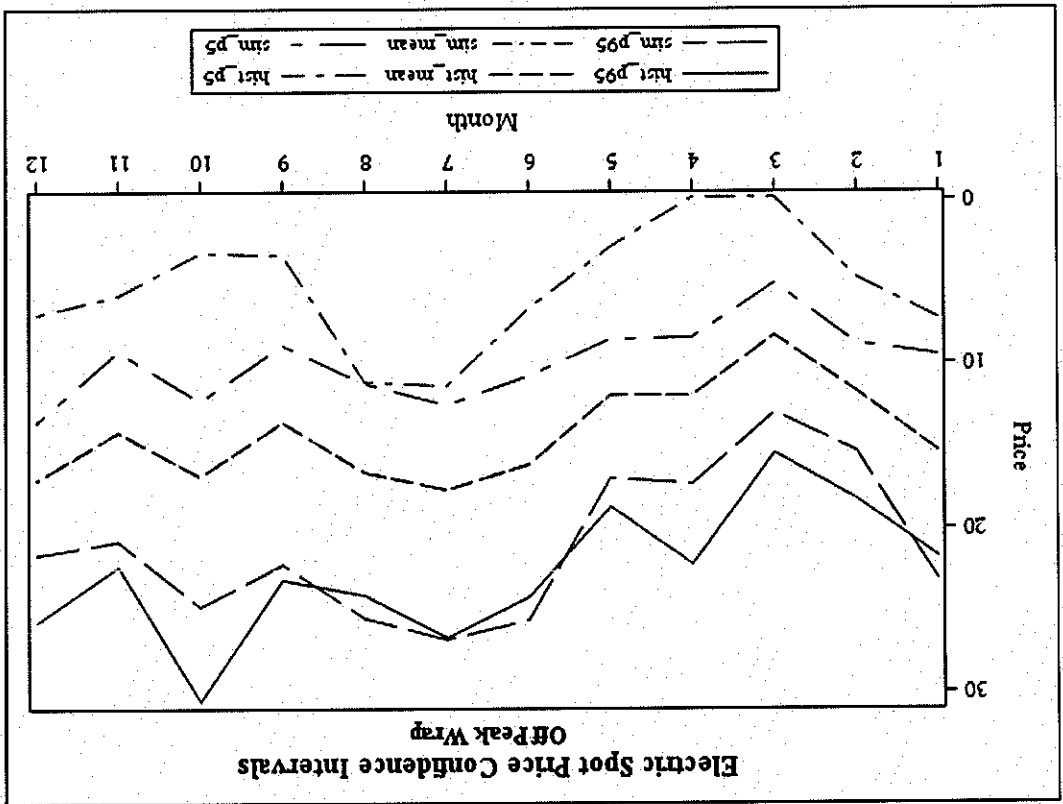


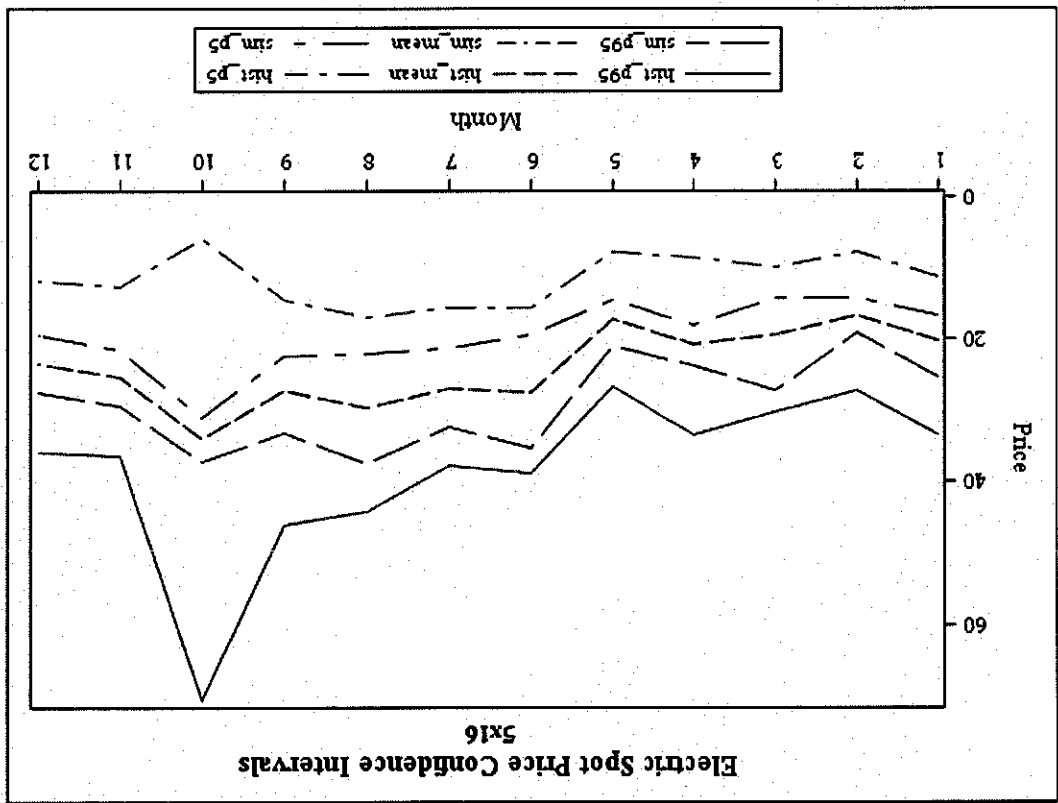
PLOT	Simulated P5	Simulated Mean	Simulated P95
	Historical P5	Historical Mean	Historical P95

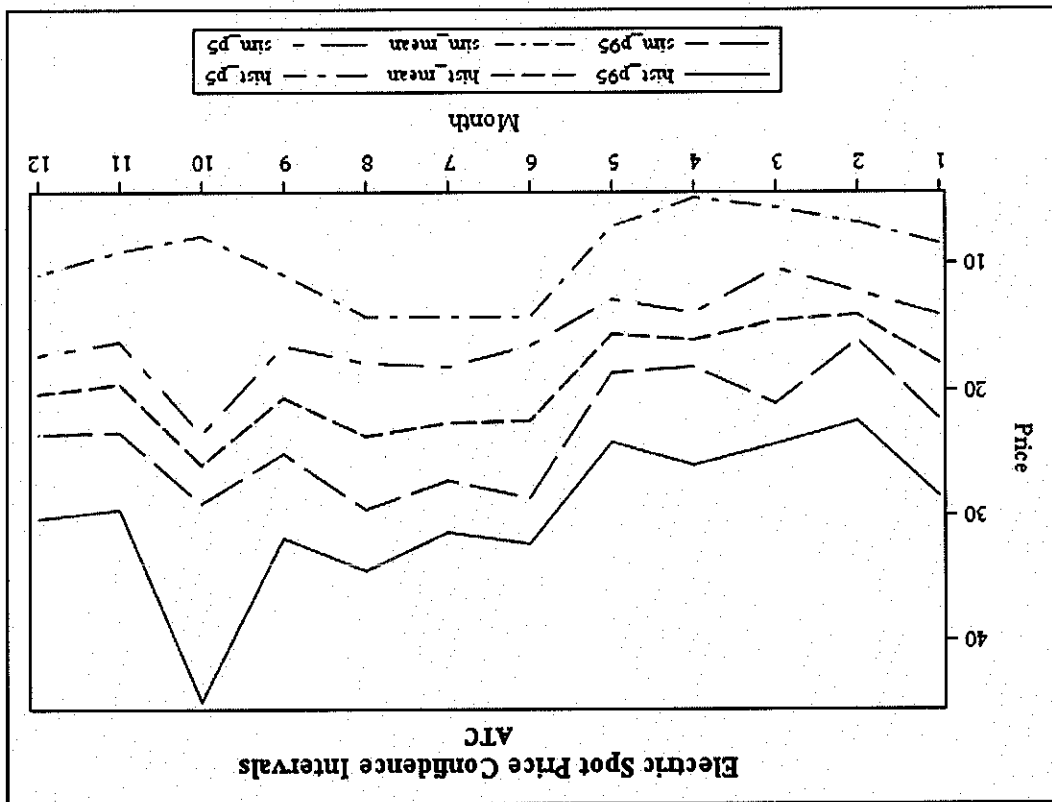
Actual vs. Simulated Maximum Drybulb Temperatures by Month of Year SISSETON, SD

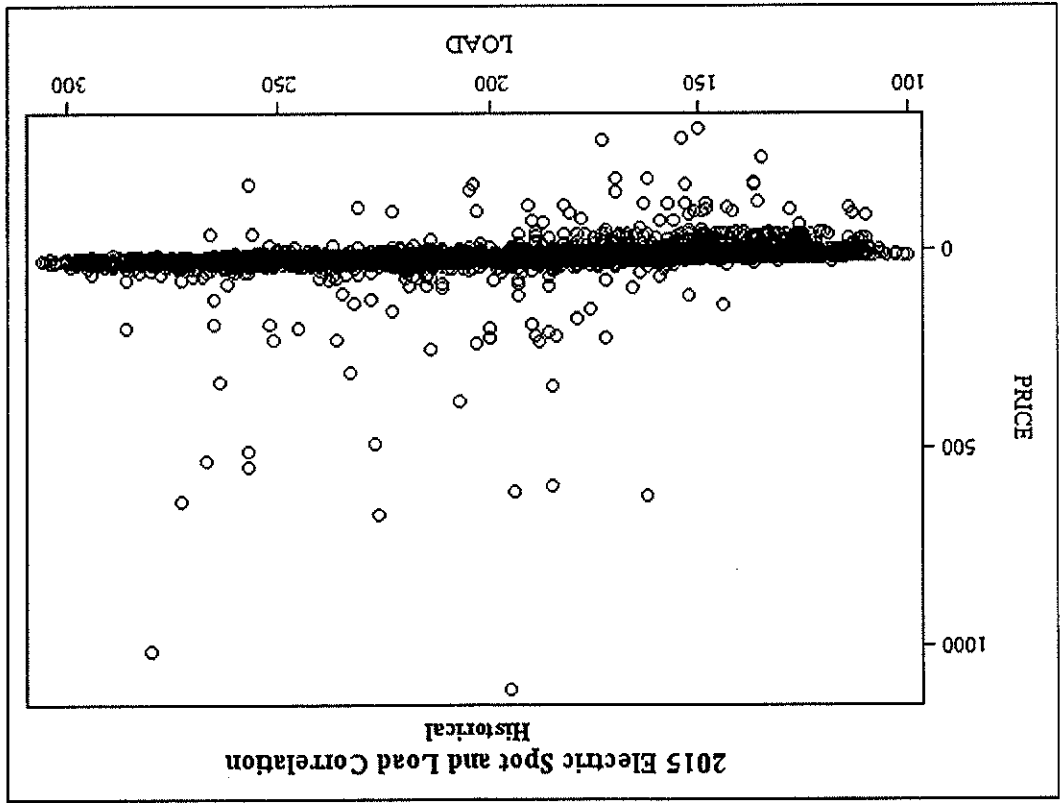


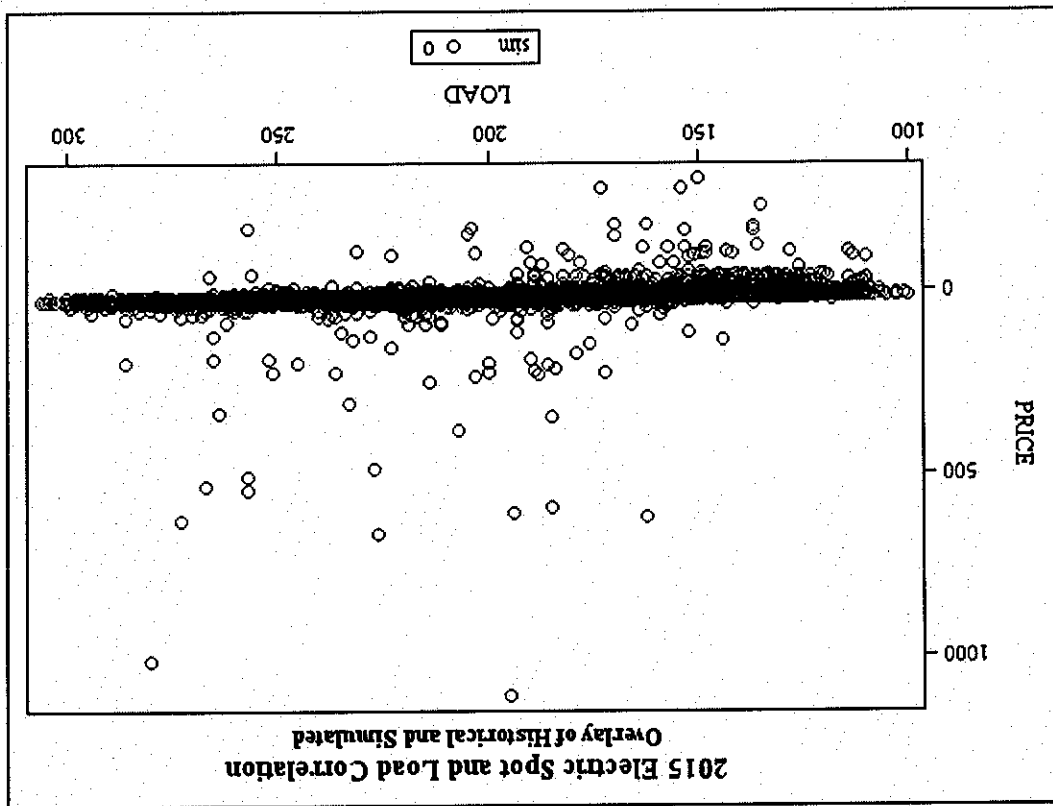




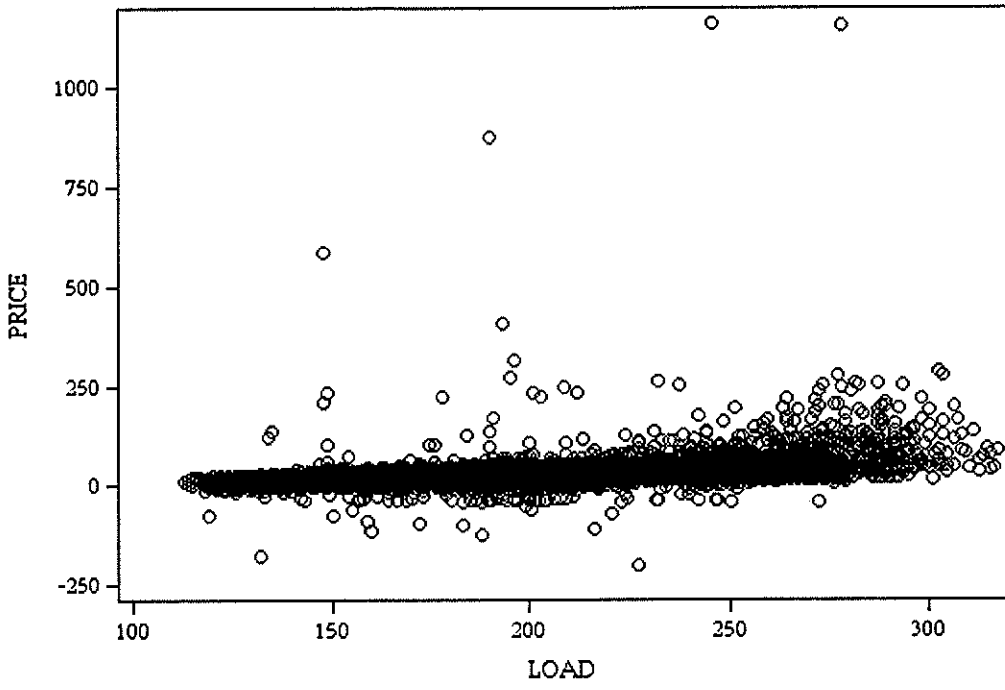




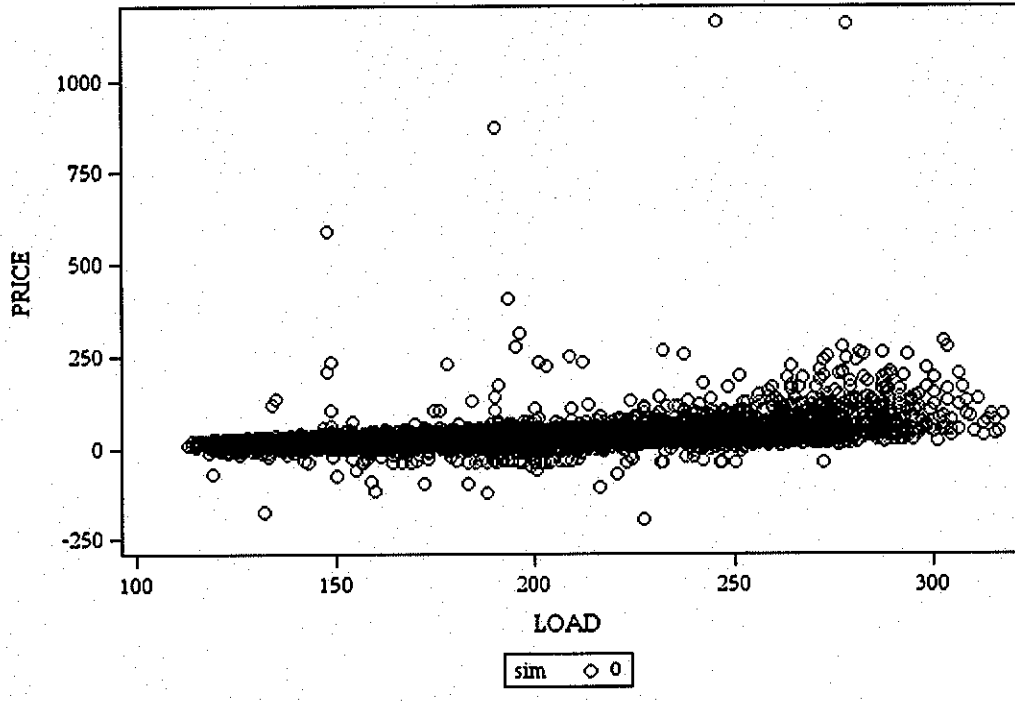




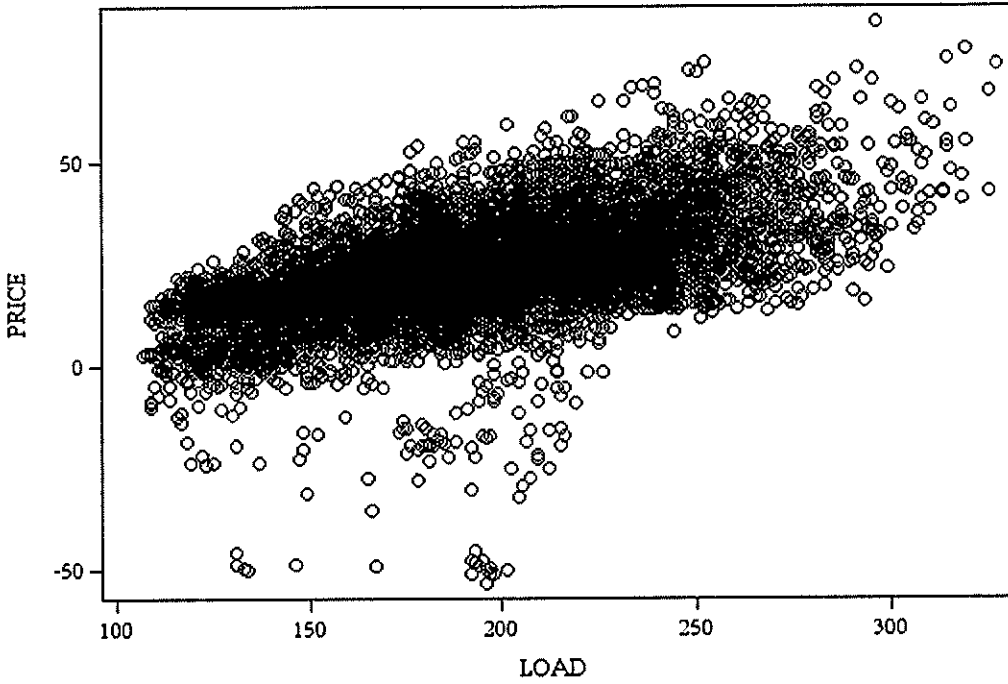
2014 Electric Spot and Load Correlation
Historical



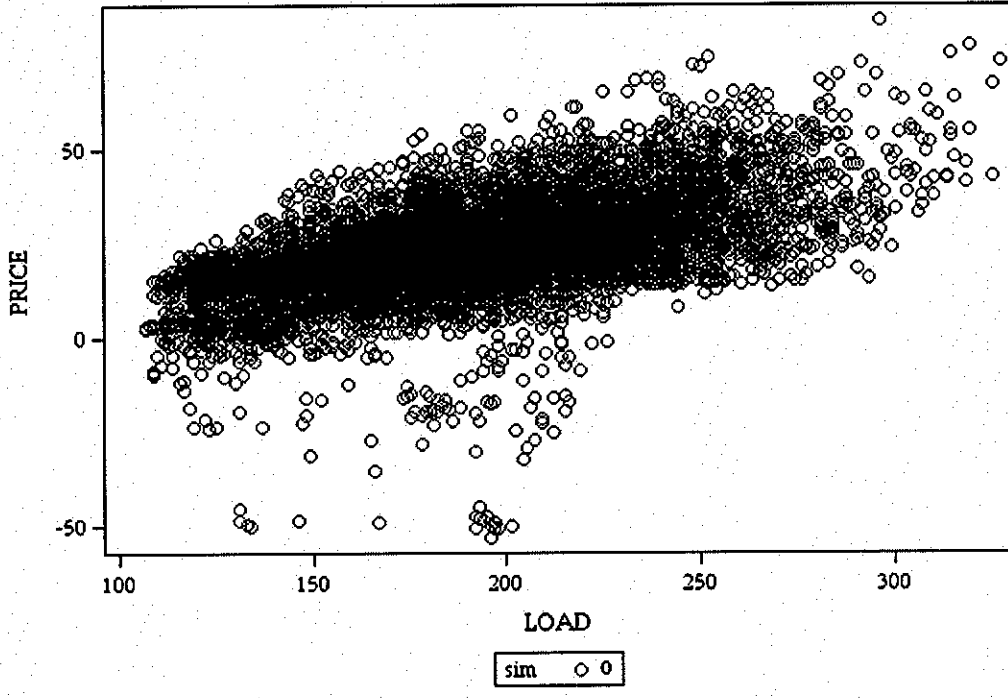
**2014 Electric Spot and Load Correlation
Overlay of Historical and Simulated**

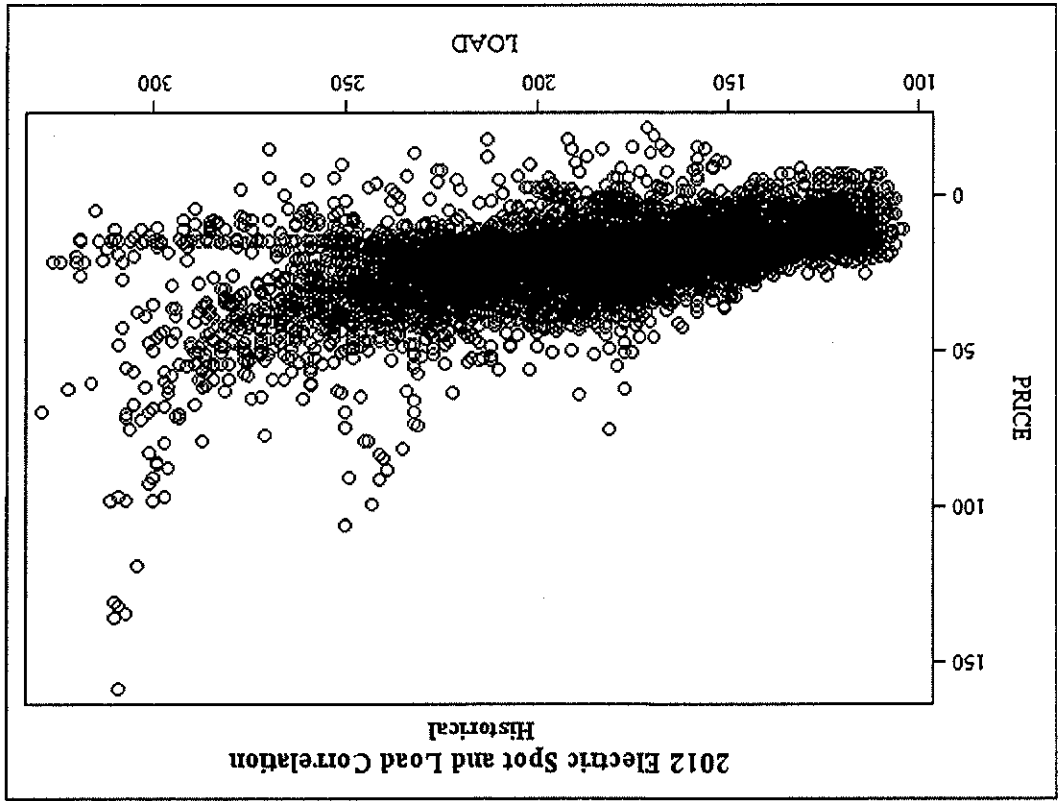


2013 Electric Spot and Load Correlation
Historical

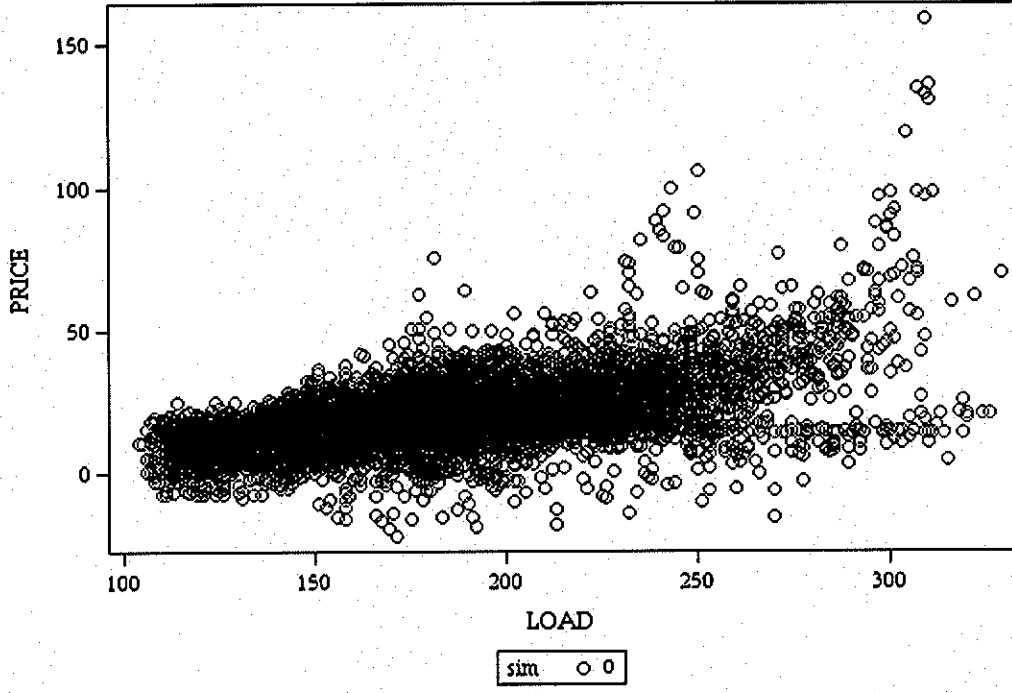


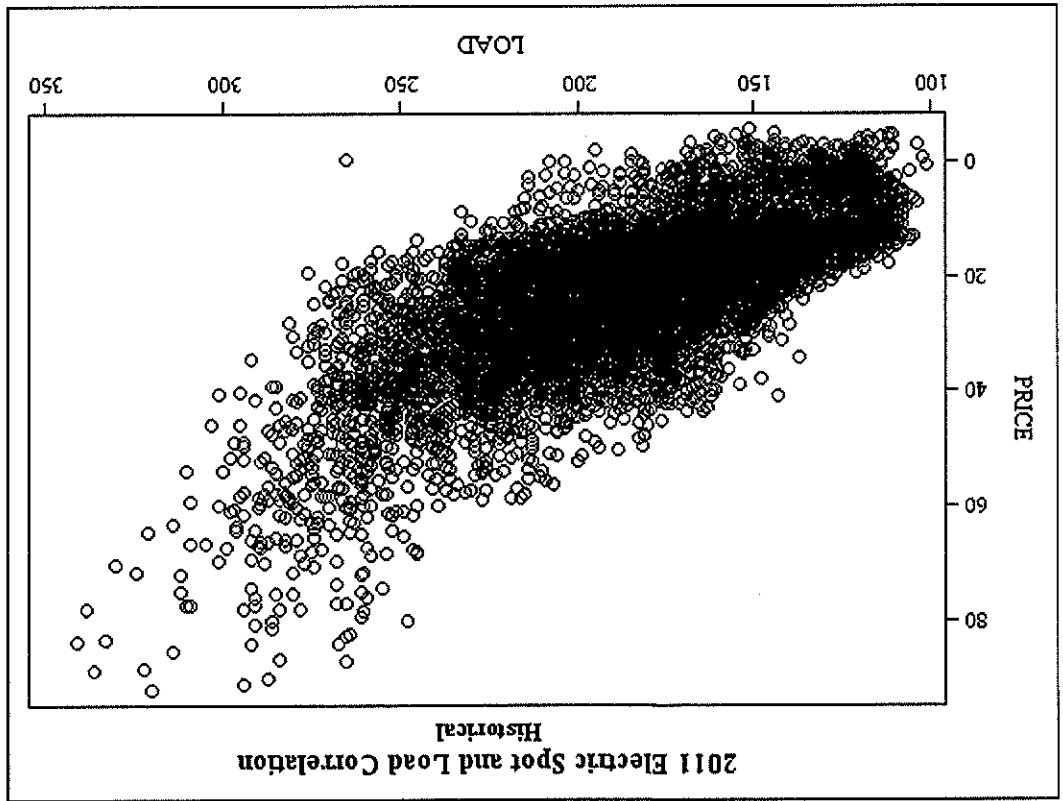
**2013 Electric Spot and Load Correlation
Overlay of Historical and Simulated**



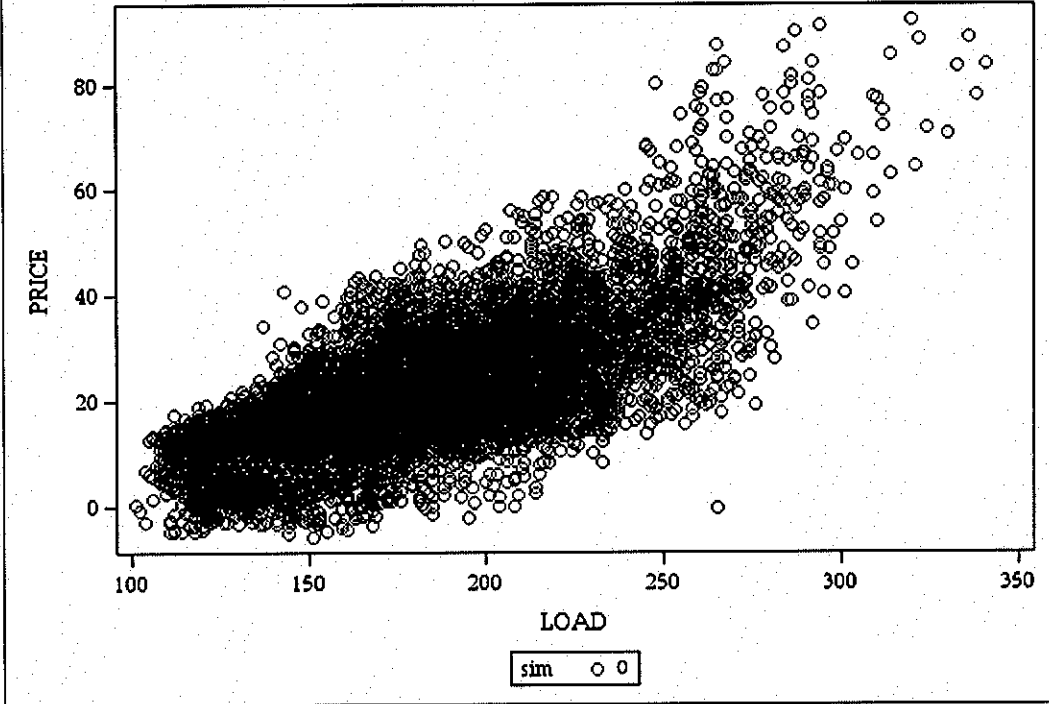


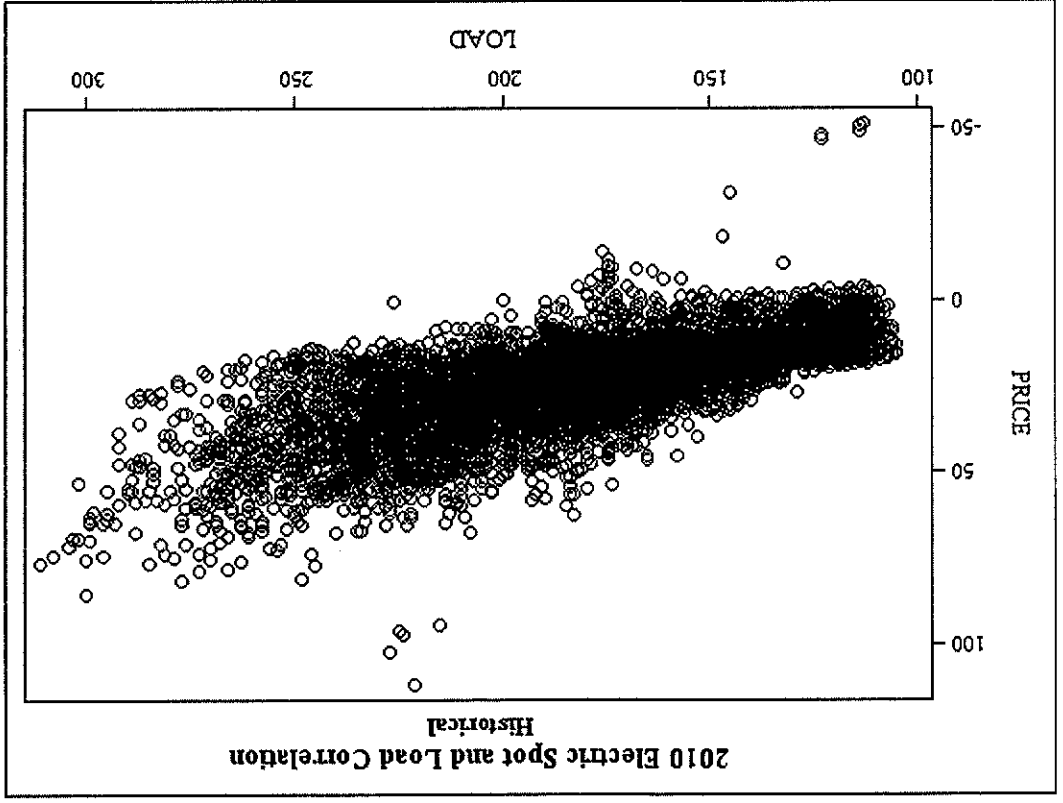
**2012 Electric Spot and Load Correlation
Overlay of Historical and Simulated**



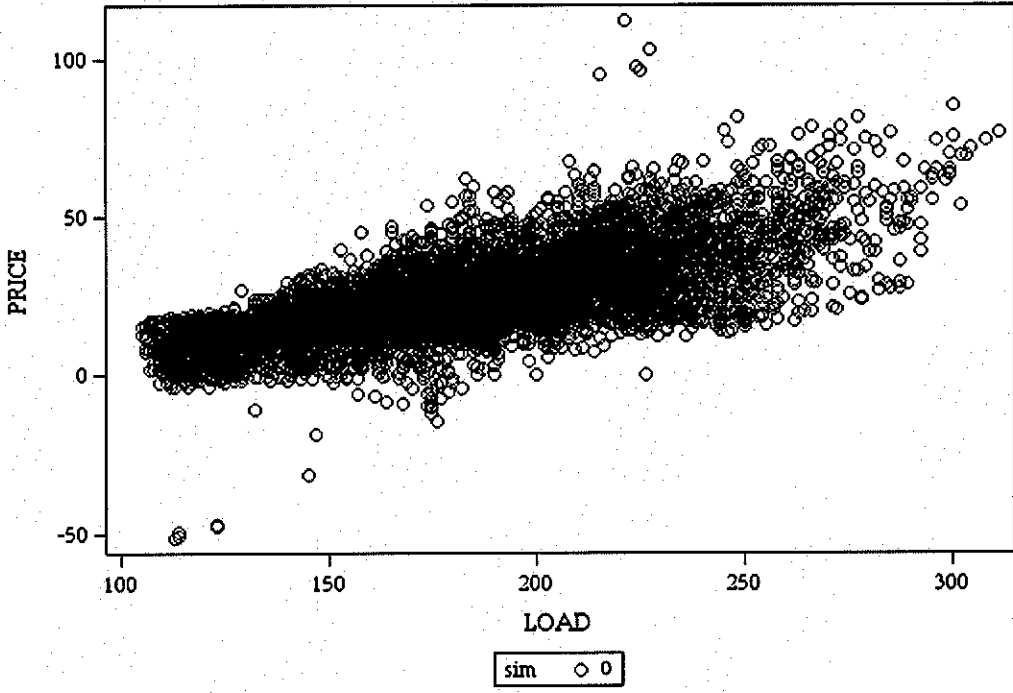


**2011 Electric Spot and Load Correlation
Overlay of Historical and Simulated**





**2010 Electric Spot and Load Correlation
Overlay of Historical and Simulated**



Gas Spot and Load Correlation
Historical

