

Final Report

Contract No. 68-R3-01-04

Sponsoring Agency: U.S. Environmental Protection Agency

**Project: Economic Impact of Mountain Top Mining and Valley Fills
Environmental Impact Statement**

Contractor: Hill & Associates, Inc.

OMB Clearance No. for Progress Reports: 2030-0005

Date: December 12, 2001

I. Background

This work was performed to provide assistance required by the U.S. EPA Region III to support the development of a Programmatic Environmental Impact Statement to assess the impacts of mountaintop mining and valley fill practices in sub-regions of West Virginia, eastern Kentucky and Virginia, as defined by the EIS Steering Committee.

In December 1998, Federal agencies and environmentalists agreed to a partial settlement of a lawsuit by the West Virginia Highlands Conservancy and several coal field residents against the WV Department of Environmental Protection (WVDEP) and the U.S. Army Corps of Engineers. Under the agreement, the EPA, the Office of Surface Mining, the Corps of Engineers, and the U.S. Fish and Wildlife Service, in conjunction with WVDEP, agreed to develop a Programmatic Environmental Impact Statement to assess the impacts of mountaintop mining and valley fill (MTM/VF) practices in Appalachian coal fields and to evaluate a range of changes to regulatory requirements and practices.

This work is part of a three-phase study to evaluate the economic impacts of regulatory changes for the mining industry. Phase 1 examines the impact of proposed regulatory changes on the amount of mineable coal reserves. Phase 2 uses these results to estimate the market impacts on coal prices, coal production, electricity generation and electricity pricing. Phase 3 addresses the total direct and indirect impact on the economies of the three eastern states included in the study.

Work on Phase 1, under a separate EPA contract, was performed by Resources Technology Corporation (RTC) of State College, Pennsylvania, to calculate coal reserves in West Virginia and the impacts of any regulatory restrictions on the amount of coal mineable with mountaintop mining and valley fill techniques. After completion of their West Virginia analysis, RTC extended their effort to include the coal reserves in eastern Kentucky and in Virginia and above-drainage reserves outside of mountaintop mineable sites. The portion of RTC's results which pertained to mountaintop *mining* sites became input to the effort by Hill & Associates, Inc. (H&A) of Annapolis, Maryland, which is the

subject of this Final Report for the Phase 2 work. H&A analyzed the implications of those regulatory restrictions on the markets for coal mined in West Virginia, eastern Kentucky and Virginia, as well as the implications on coal and electricity prices.

II. Methodology

In this study, H&A used its proprietary database of coal mine operations and costs, its integrated Coal Forecasting System and National Power Model, data produced by RTC as described above, and its professional expertise in coal and energy markets to conduct the analysis of regulatory impacts on the selected coal markets and energy prices. H&A produced a baseline forecast with its models for each year in the period 2001-2010. This same time period then was again forecasted for each scenario of potential MTM/VF regulation. It is important to note that this current work includes the impacts of only one variable, the restriction of valley fill watershed size. Any other potential changes to the economics of surface mining in the study area are not included in this study.

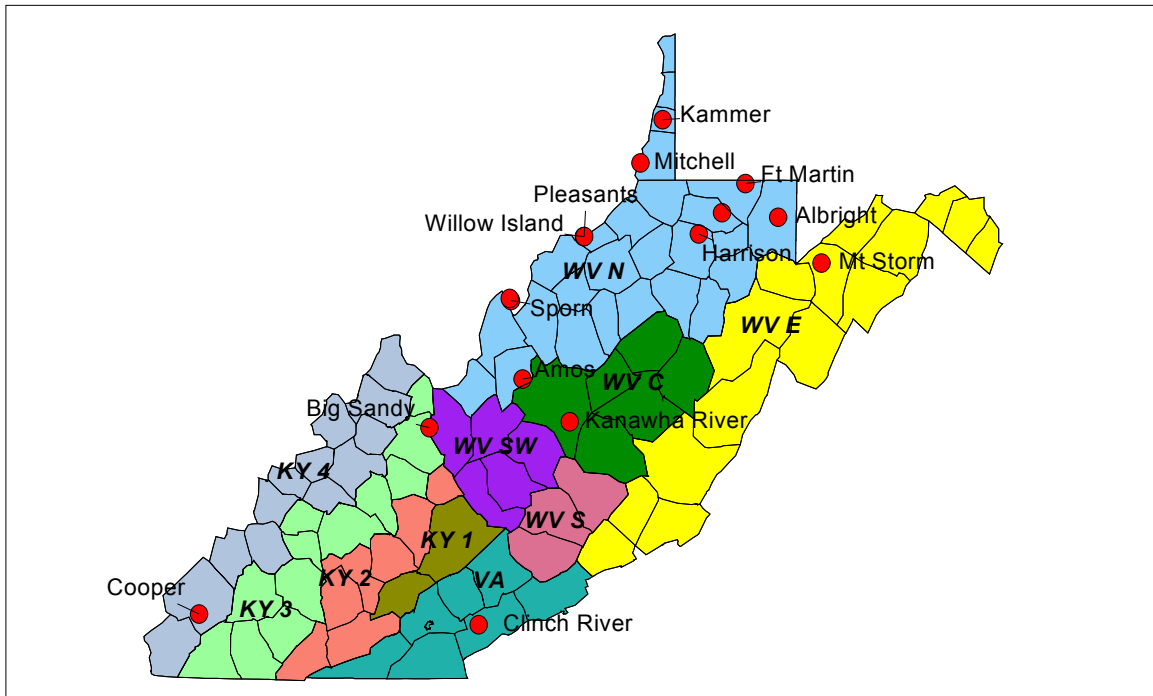
II.A. Assumptions

The baseline forecast was under an assumption of pre-lawsuit status quo with regard to Central Appalachian mining regulations. However, changes in utility plant air emission regulations were allowed to occur according to the scenario approved by the EIS Steering Committee. These changes include the implementation of National Ambient Air Quality Standards for ground-level ozone and for fine particulate matter. Specifically, the modeling assumed the following post-1998 structure of air emission environmental regulation of electric power plants:

- Title IV Phase II SO₂ and NO_x standards starting in 2000
- EPA 19-state (formerly 22-state before court relief granted for MO, WI and GA) NO_x SIP Call effective in 2005 (assuming further delay beyond 2004)
- NAAQS fine particulate standards represented as 50% reduction in SO₂ from Phase II levels beginning in 2008
- No CO₂ limits during the time frame of this study

Holding this year-by-year pattern of air emission regulations consistently the same across mining scenarios, H&A conducted an assessment, across four alternate mining regulatory scenarios, of changes from the base case in supply conditions in five mining sub-regions of West Virginia, four sub-regions of eastern Kentucky, and one region representing Virginia. Those sub-regions are shown in the figure below:

Figure 1 – Sub-Regions of the Study (With Power Plants)



The four alternate scenarios in addition to the Base Case are:

- Limiting valley fills to 250 acres watershed size
- Limiting valley fills to 150 acres watershed size
- Limiting valley fills to 75 acres watershed size
- Limiting valley fills to 35 acres watershed size

Using the supply changes provided by RTC from Phase 1, H&A then modeled the coal and electricity market implications of the four alternate regulatory scenarios using its integrated Coal Forecasting System and National Power Model.

RTC provided H&A with a database, which contained an estimate of recoverable coal reserves for each potential mountaintop removal site in West Virginia. In situations where a given site was mineable across a county boundary, the amount of coal in each county was calculated separately. RTC also provided an estimate of how much these reserves would be reduced for each of the four restricted mining scenarios.

In order to apply these numbers from RTC to H&A's existing database of coal production, reserves and mining costs, we calculated the percentage reduction for each mining case on a county by county basis. We then adjusted the reserves and production figures in our supply database downward by the same percentages, on a county by county basis in West Virginia. H&A did not interview individual coal producers to ascertain their estimates of reserve reductions on specific properties. The following table shows

the calculated reduction percentages by West Virginia county. It shows the remaining fraction of each county's surface reserves after portions are rendered unmineable by the proposed MTM/VF restrictions.

Table 1 – West Virginia County Reduction Impact

| <u>COUNTY</u> | <u>STATE</u> | Remaining Fraction of Surface Reserves (Not Rendered Unmineable by MTM/VF) | | | |
|---------------|--------------|---|-----------------|----------------|----------------|
| | | <u>250 Acre</u> | <u>150 Acre</u> | <u>75 Acre</u> | <u>35 Acre</u> |
| BARBOUR | WV | 1.000 | 1.000 | 1.000 | 1.000 |
| BOONE | WV | 0.995 | 0.922 | 0.703 | 0.277 |
| BRAXTON | WV | 1.000 | 1.000 | 1.000 | 1.000 |
| CLAY | WV | 1.000 | 1.000 | 1.000 | 0.602 |
| FAYETTE | WV | 1.000 | 1.000 | 1.000 | 0.118 |
| GREENBRIER | WV | 1.000 | 1.000 | 1.000 | 1.000 |
| KANAWHA | WV | 0.913 | 0.913 | 0.415 | 0.119 |
| LINCOLN | WV | 0.128 | 0.128 | 0.111 | 0.075 |
| LOGAN | WV | 0.766 | 0.554 | 0.272 | 0.088 |
| MCDOWELL | WV | 1.000 | 1.000 | 0.850 | 0.360 |
| MERCER | WV | 1.000 | 1.000 | 1.000 | 1.000 |
| MINGO | WV | 0.786 | 0.781 | 0.505 | 0.218 |
| NICHOLAS | WV | 0.994 | 0.976 | 0.801 | 0.390 |
| POCAHONTAS | WV | 1.000 | 1.000 | 1.000 | 1.000 |
| RALEIGH | WV | 0.380 | 0.380 | 0.380 | 0.182 |
| RANDOLPH | WV | 1.000 | 1.000 | 1.000 | 1.000 |
| SUMMERS | WV | 1.000 | 1.000 | 1.000 | 1.000 |
| UPSHUR | WV | 1.000 | 1.000 | 1.000 | 1.000 |
| WAYNE | WV | 0.332 | 0.332 | 0.332 | 0.247 |
| WEBSTER | WV | 1.000 | 1.000 | 1.000 | 0.797 |
| WYOMING | WV | 0.633 | 0.663 | 0.633 | 0.073 |

For the purpose of this study, it was assumed that deep-mineable coal reserves were not affected by the hypothetical mining restrictions. However, in practice, deep mines in the study region typically feed raw production to a preparation plant for cleaning, and the reject material is often deposited in a nearby valley. The EIS Steering Committee instructed that coal refuse disposal associated with deep mining is not a part of this study.

RTC did not have the same detailed mapping capability in Kentucky and Virginia as it did in West Virginia. Therefore, RTC compared the topography in the coal producing counties of those states to the counties in West Virginia and supplied H&A with a table of comparable counties. H&A used these comparisons and made the same production/reserve reductions for counties with similar slope characteristics. The

following table shows the coal producing counties in Virginia and Kentucky and the counties in West Virginia with similar topographic characteristics.

Table 2 – Similar Eastern Kentucky and Virginia Counties

| <u>County</u> | <u>State</u> | <u>Similar WV County</u> |
|---------------|--------------|--------------------------|
| Bell | KY | Braxton |
| Breathitt | KY | Webster |
| Clay | KY | Wayne |
| Dickenson | VA | Webster |
| Floyd | KY | Clay |
| Harlan | KY | McDowell |
| Jackson | KY | Raleigh |
| Johnson | KY | Wayne |
| Knott | KY | Boone |
| Knox | KY | Fayette |
| Laurel | KY | Raleigh |
| Lawrence | KY | Wayne |
| Lee | KY | Raleigh |
| Leslie | KY | Boone |
| Letcher | KY | McDowell |
| Magoffin | KY | Kanawha |
| Martin | KY | Lincoln |
| McCreary | KY | Raleigh |
| Morgan | KY | Wayne |
| Owsley | KY | Nicholas |
| Perry | KY | Clay |
| Pike | KY | Mingo |
| Pulaski | KY | Raleigh |
| Rockcastle | KY | Fayette |
| Whitely | KY | Raleigh |
| Buchanan | VA | Boone |
| Lee | VA | Raleigh |
| Russell | VA | Nicholas |
| Scott | VA | Fayette |
| Tazewell | VA | Nicholas |
| Wise | VA | Nicholas |

At the sites where RTC determined that mountaintop mining would not be feasible in the four restricted cases, RTC also calculated the tonnage of coal reserves that could be recovered by three other methods including: continuous-miner deep mine, contour strip, auger/highwall miner. These reserves were “added back” to the supply database as possible new mines. The hypothetical opening of these mines was delayed two years to account for engineering and permitting.

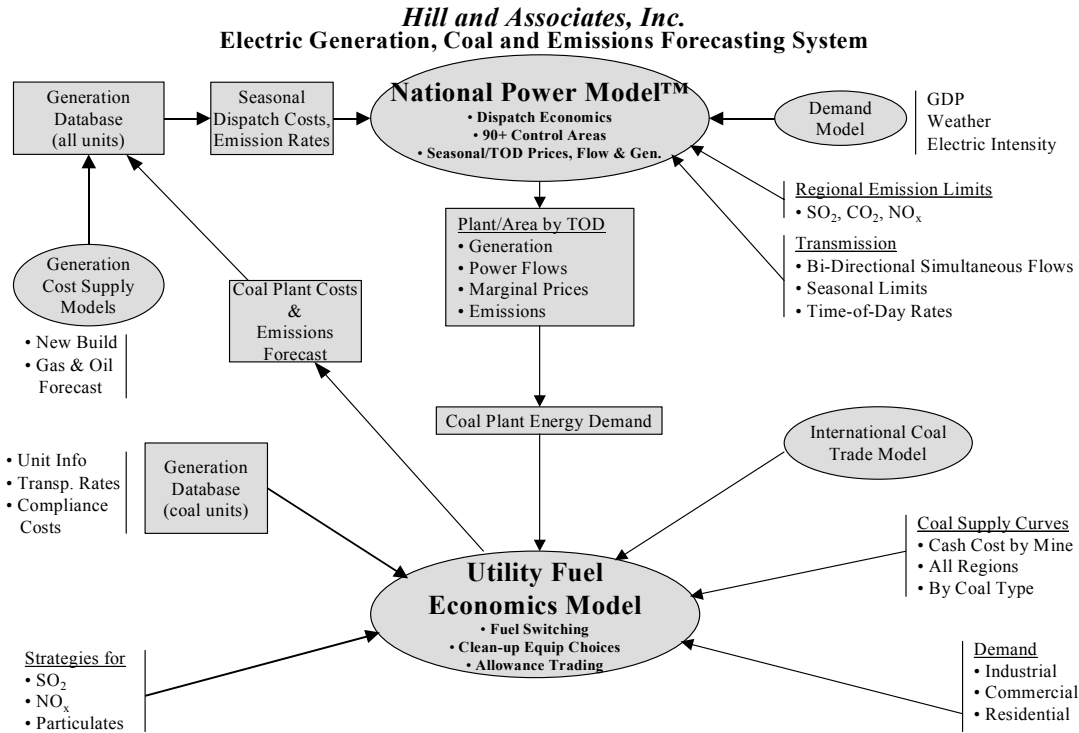
The mining cash operating costs on a per ton basis for active mines in our original database were held constant as the production and reserve values were reduced for each scenario. For the reserves that could be recovered by other methods, we assigned the average costs for active mines for each type of mining in each county.

In order to compare mining regulatory scenarios on both a risk-adjusted basis as well as an unadjusted basis, H&A ran two separate versions of the Base Case. One Base Case version used a “standard” 10% Return on Investment (ROI) criterion for investment in new coal mining capacity, while the other Base Case version used the same 15% ROI criterion that the MTM/VF regulation-affected scenarios used to reflect higher capital investment risk under a more aggressive regulatory environment.

II.B. The Models

The flow diagram in Figure 2 summarizes the actual modeling system that H&A uses to develop coal demand, supply and price projections, along with the electricity generation and electricity pricing associated with these coal projections.

Figure 2



This system is a combination of two primary models, the Utility Fuel Economics Model (UFEM) and the National Power Model (NPM). The UFEM determines optimal fuel choices as well as optimal environmental clean-up equipment selection at each utility coal-fired plant in the nation, while the NPM determines optimal dispatch of all electric generating plants (both coal and non-coal) on the electric grid.

By looping back and forth between these two models in a circular fashion for each year under a specific set of environmental rules, an overall converged optimization is reached in which the fuel and clean-up choices at each coal plant are dependent, in part, upon the plant's amount of dispatch while that dispatch is simultaneously determined, in part, by the costs and emissions from those fuel-related choices. The primary usefulness of this modeling approach for this current project lies in the fact that all U.S. plants are considered simultaneously in competition with each other both for their coal supply and for their competitive dispatch on the electric grid. The summation of individual plant fuel demands results in a total of coal demand for each specific region's coal.

Additionally, since we have each plant's most likely decision on the installation of environmental clean-up equipment (and have used an estimate of the costs associated with installing and operating such equipment in obtaining that likely decision), the final converged optimization result contains the plant-by-plant building blocks from which we can sum each sub-region's total of capital expenditures by utilities for environmental clean-up equipment. Those totals by sub-region are reported by year as results from this study.

During specific runs of the modeling system, as the National Power Model dispatches all the plants in the U.S. simultaneously by time-of-day and season, the coal-fired plants are competing against each other and against other generating plants such as gas-fired, nuclear, hydro, etc. Depending upon which environmental limits are in effect in each area of the country for the year being modeled, more or less power will be required from individual coal-fired plants, and these requirements are then translated into specific types of coal demand in the Utility Fuel Economics Model. The aggregated total tonnages for each coal type then become the basis for that scenario's coal forecast. To this electric utility basis are added independent projections of industrial steam coal use and exports of steam coal. The resultant totals by coal type determine the market clearing price for each coal as prices "float" against each other from their respective cost-supply curves.

II.C. Mining Cost-Supply Curves

Inside the UFEM model, the supply curves relating mining costs to production capacity were built up from mine-by-mine estimates of cash operating costs for all currently operating mines in the country. The cash operating costs used in the model's supply curves are defined as including the following components: labor, materials and supplies, trucking to the prep plant or load-out, preparation costs (including loading), Black Lung/Reclamation taxes, mine overhead charge, division overhead charge, pension contribution, property tax, severance tax, and royalties.

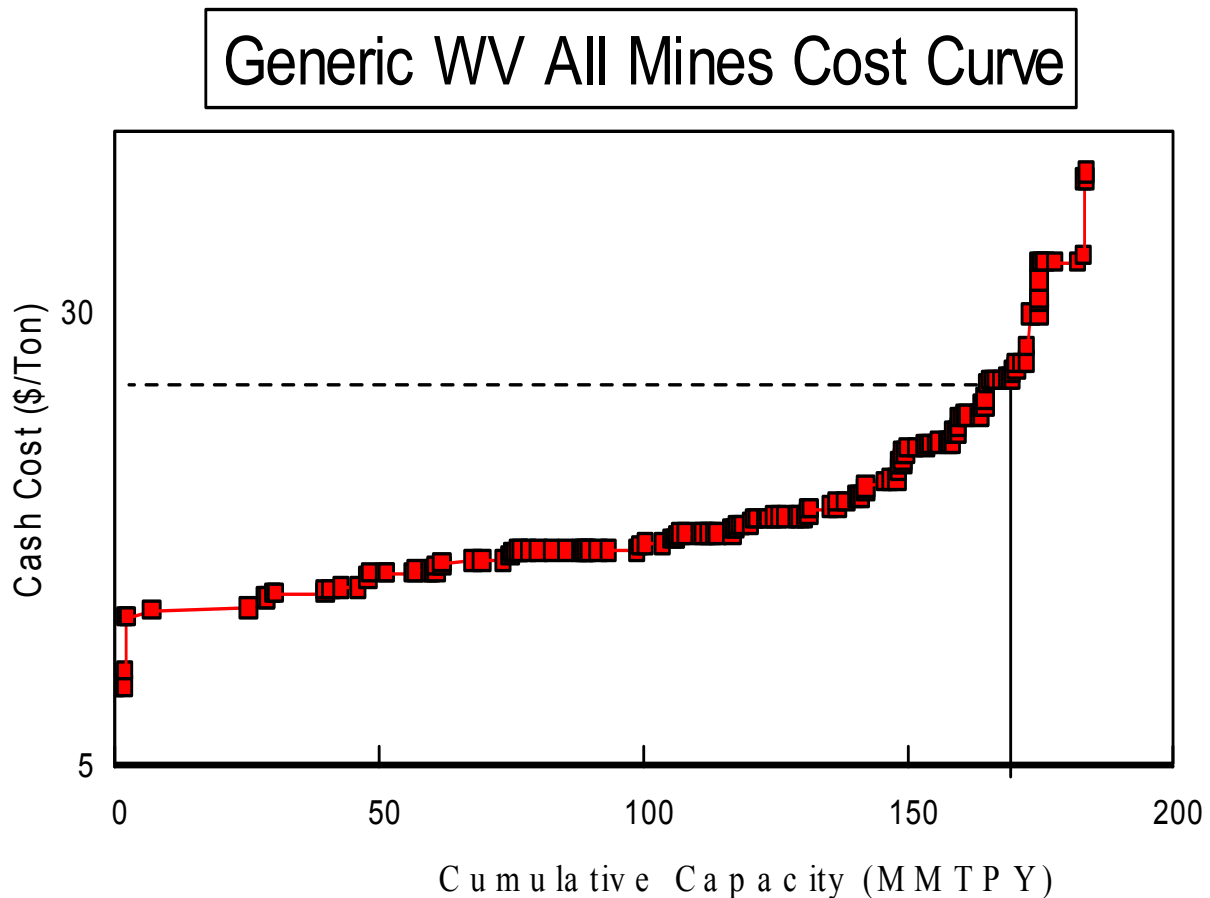
Much of the information on costs, qualities and reserves was taken from the detailed county-by-county studies of coal supply that Hill & Associates, Inc. has been publishing for more than 15 years. Within our proprietary database, costs for all active mines were estimated by entering mine specific data into computer models developed by Hill & Associates. MSHA databases provided information on active mines, production, employees and manhours worked, from which we calculated productivity. This base was

supplemented with information from mine interviews concerning work schedules, equipment, percentage of washed coal and trucking distances. In instances where trucking distances were not obtained by interviews, the distance was measured between the mine and the preparation plant via the most logical road using a computer-mapping program. Costs for potential mines on undeveloped properties were estimated by looking at costs of comparable active operations located nearby.

In the current version of the UFEM model, we have more than 100 separate sub-types of coal including 12 in West Virginia, 9 in eastern Kentucky and 5 in Virginia. For example, southern West Virginia mid-Btu near-compliance coal originating on the CSX railroad is a unique coal type with its own cost-supply curve separate from that same coal originating on the Norfolk Southern railroad.

Although Hill & Associates considers their individual mining cost curves (by specific type of coal) to be highly proprietary, we include in Figure 3 below a composite generalized curve for West Virginia for purposes of understanding in this report. The figure will be referenced in the methodology discussion that follows.

Figure 3



Each step on each mining cost-supply curve represents one mine with its own individual characteristics. It is this fact that allows us to incorporate the results of Phase 1 of the overall EIS study (the work by Resources Technology Corporation) into the H&A modeling system to differentiate between the separate MTM/VF regulatory scenarios. In particular, although RTC's results are not property-specific, the relative amount of coal made unmineable (or shifted to a higher-cost mining technique with less recovery) in each county under each MTM/VF scenario can be reduced to a percentage impact for that county.

Since we know the location of each mine and its characteristics, we can take each surface mine in a county and apply the county's percentage reduction impact to that mine's capacity and reserves (including, where appropriate, adding back a smaller higher-cost step into the mining cost-supply curve from which that mine was taken if the MTM/VF reduction could partially be replaced with another type of mining). Spreading the county's aggregated reduction percentage across all surface mines in the county does not exactly match what would happen in the real world where a true mountain top mining project might be more heavily affected while a small contour mining operation might escape totally unaffected. However, for the purposes of determining coal price and tonnage impacts on multi-county sub-regions of the affected states, it is believed that this methodology provides virtually identical results to what would be obtained if we had exact property-specific match-ups from Phase 1 of the overall EIS study. Although modeling, by its nature, establishes some industry-typical behavior patterns and decision rules, we would expect in the real world that some mines would be better prepared than others to adapt to any new regulations.

It is important to note that both the current production capacity and the reserves were reduced in this study by the appropriate county's reduction percentage. This implies a *de facto* assumption that any MTM/VF restrictions would be applied with no "grandfather" provisions exempting existing operations. In other words, existing operations that would violate the scenario's interpretation of MTM/VF rules would have their production capacity (in the modeling) immediately reduced, as well as having their reserves reduced for supporting future production. A methodology of reducing only reserves and leaving existing capacity intact (effectively grandfathering existing operations) could have been used, but one methodology or the other was required to be chosen for a single study, and the EIS Steering Committee chose the one equally affecting both reserves and existing capacity. The real world impact of the mining restrictions during the first year might be muted somewhat, compared to our modeling results, due to the fact that some operations have established fills and pre-stripped some amount of overburden for future mining.

The mine-by-mine nature of the steps on the model's mining cost curves serves a second purpose in this project. After the converged optimization is achieved between the UFEM and NPM models for any given year for a specific scenario, the final total amount of coal taken from each supply curve is used to determine which steps (or individual mines) produced coal in that model run, and which did not. As an output function, then, the supply curves are "broken apart" after the run, and the mines actually producing are

summed by their type of mining (surface versus deep) and their sub-region of location. Thus, the tonnage results included later in this report are obtained by this summation (across several cost-supply curves) of the mines from a particular sub-region that actually produced coal in that year's model run for that scenario.

Since each coal type represented by a mining cost-supply curve has its own final market clearing price after the model run is done, a weighted average price calculation can be performed for each sub-region's coal production during the summation procedure described above. It is important to note that the modeling approach used in this study yields short-term market clearing prices for new business at the margin, and it does not include any averaging into the results of older long-term contracts which may be "out of market."

In addition, since we know the very specific type of mining such as longwall mining or continuous miner sections for each step (or individual mine) on the cost-supply curve, we can use our knowledge of typical manning tables for each type of mine to estimate the direct coal mining employment in each sub-region during the summation process described above for mines that actually operated during the model convergence runs. Future manning levels at coal mines were estimated by using the active production and productivity rates as reported by MSHA for surface and deep mines in the study area. The total number of production employees at active surface and deep mines was divided by the actual tonnage produced to determine ratios. These were then used as multipliers and were applied to the tons of production that were predicted by the model for the future years.

The values shown in the tables represent production employees only and do not include prep plant and mine office personnel. On the average, surface mines increase employment by 3.9 percent for the non-production tasks, including mine office staff, prep plant and "yard workers." For deep mines, the average is 10.5 percent. The overall average is 8.2 percent for deep and surface mining. In addition, some state labor statistics for "coal industry employment" include non-mining personnel involved in transportation, marketing and support services. None of these categories are included in the direct production employees reported in the results of this study.

II.D. Electricity Input/Output

On the electricity side, the NPM model works in a similar fashion with electric dispatch cost curves instead of mining cost curves. However, while the UFEM's mining cost curves stay relatively static during the modeling of any one year in a scenario (they do change across years as described later), the NPM's dispatch cost curves are very fluid during one year's looping between the models, changing with each loop as the coal-fired plants enter the electricity model with sometimes significantly different costs and emission rates due to their fuel and clean-up choices in each loop. Figure 1 above shows not only the sub-region definitions, but also the major coal-fired utility plants within each region. The electricity outputs from the NPM model include not only the megawatt-hours from coal-fired plants, but also the generation from all generators in the sub-region.

Wholesale electricity prices reported as output from the NPM model are really the “lambda” costs for each control area (basically, each utility) in the model. This lambda cost is defined as the dispatch cost of the very last plant that dispatched (i.e. the highest-cost plant that actually ran in that time-of-day period) within that control area. If the highest-cost power actually used for that time period happens to be wheeled power imported from a neighboring utility, then that cost of imported power is the lambda cost reported out as “wholesale electricity price” for that time-of-day and season for that control area.

Since the study sub-regions were defined around coal production, it turns out that some of them have no generating facilities in the sub-region. For this reason, some sub-regions will show electricity “results” in later sections of this report that stay uniformly at zero. Obviously, there still exists a price for electricity for those regions (although not a megawatt-hours of production number). However, we opt to report the “raw” weighted averages of electricity price from generators for the Phase 2 results, leaving it to the expertise of Phase 3 modelers to impute an electricity price from surrounding areas for those that show zero.

II.E. New Capacity Additions

Finally, we turn now to the methodology by which new capacity, both for coal mining and for electric generation, is added in the modeling. With regard to coal productive capacity, each cost step on the mining cost-supply curves has a “tons per year” new capacity number associated with it, as well as an amount of “additional” reserves that are associated with that new capacity (where that new capacity would be based on newly developed reserves). For many lower-cost steps, one or the other of these amounts (or both) have a zero value in the model because we believe that no new capacity can be built at that cost level or no new reserves are available to be developed at that level.

The real meaning behind those “new” mining capacity numbers (and associated reserves, in some cases) is important. In a few instances, this new capacity is actually associated with the specific mine whose cash operating cost was the basis for building that step into the curve. For those instances, our estimate is that the particular mine in question has the appropriate coal reserves available and the ability to expand their production at the same cost level at which they are now operating.

More often, this new capacity is not associated with that mine but rather represents the “step-out” capacity (at a cost increase) for another mine that is lower on the cost-supply curve. In other words, the lower-cost existing mine may have the opportunity to purchase or lease adjacent reserves that are not as geologically favorable for economic mining as those of their existing operation (or the step-out reserves may require longer haulage to a preparation plant at increased cost, for example). For this reason, the mining cost-supply curve has this higher cost step with zero initial capacity, but non-zero latent expansion capacity, lying “on top of” the step for the other, higher-cost existing mine which just

happens to have the same cash operating cost as would be incurred with these other reserves.

In the UFEM model, the market clearing price for any coal is determined by the relationship between the final converged demand for that coal and the cost-supply curve for that coal. Referring to Figure 3 above, this is demonstrated by the vertical solid line (representing a hypothetical 170 million ton demand against the “generic WV all mines cost curve”) which intersects the curve and generates the horizontal dotted line that goes to the left and hits the Y-axis at a “market clearing” coal price of something under \$30 per ton.

This market clearing price is reported from the model as the coal’s price except in instances where there is extreme shortage of the coal in question. If the competitive balance point for demand is so large compared to available capacity that it is effectively beyond the right-hand edge of the cost curve, then there is no “intersection” of demand with the curve. In that case, the reported price is set at a “net-back” value representing the highest value that some potential purchaser would actually be willing to pay (if more of that coal were available) in order to avoid some other costs such as installing a scrubber or purchasing another coal at high delivered cost. A real-world example of this netback phenomenon occurred in mid-2001 when Powder River Basin coal, whose cash operating cost does not exceed, say, \$4.00 per ton, was selling in the marketplace for \$12.00-\$14.00 per ton. The coal was truly “worth” that to some buyers who could avoid paying \$50.00 per ton for eastern coal in the very tight market.

For any point (or mine) on the curve to the left of the solid vertical “demand” line in Figure 3, the vertical distance down from the dotted line to the point (or mine) measures the cash “margin” that is available to that mine at that market clearing price. (We avoid the word “profit” here since the capital investment in the original mine is being ignored, and we are dealing only with cash operating costs.) For instance, referring to Figure 3 above, the mines falling between 160 and 170 mmtpy on the X-axis are just barely below the dotted line and may be making a cash “margin” of only \$1-\$2 per ton to cover their capital investment plus true profit. On the other hand, all of the mines below, say, 100 mmtpy will be experiencing a cash “margin” of several times that amount. For any particular mine, this larger cash “margin” may not only cover capital recovery (depending on the investment cost in that mine), but may be generating a Return on Investment (ROI) in excess of 10%. It is important to remember that Figure 3 is an illustrative generic curve and that the actual curves used in the modeling are much more definitive by type of coal instead of simply “all WV.”

Now all of the pieces start coming together with regard to the addition of new capacity into the mining cost curves. During the running of the UFEM model for any given year in a scenario, a check is made of this cash “margin” for every point on every curve. When the margin is sufficient to meet or exceed the criterion ROI for the expansion capital investment in that particular scenario, then that step’s latent “new capacity” is brought into the curve at that specific cost level, effectively expanding the horizontal span, or capacity, of that step.

However, the model imposes an overriding limit in each area (the “Area Limit”) to avoid the situation where a price spike could trigger more capacity investment (in the model) than could be realistically accommodated in the real world. The model starts at the lower end of the curve (where cash “margin” is the greatest for any equilibrium price) and brings on the economically justified new capacity additions until the overriding “Area Limit” is reached. After that point, cost steps are not allowed to expand (in this particular year), even though the criterion ROI would be exceeded for that mine to expand. It is important to note that the overriding limit frequently is not reached even with fairly high prices because there is little expansion capability at the lower cost levels on the left side of the curve – Most of the undeveloped capacity occurs at higher cost levels.

In the modeling, we assumed that the initial year in which valley fill restrictions are first imposed (2002 in these scenarios) would be a “regrouping” year in which coal producers would concentrate on adjusting to the new rules at their existing operations and would not invest in ROI-driven capacity expansion for new operations inside the study area. Our primary rationale was that producers would take a “wait and see” attitude to let things “settle down” under new rules before they replaced their lost capacity. A secondary rationale was that at least a portion of any new replacement capacity would need to go through the design, engineering, permitting and construction procurement process, and all of this takes time.

One additional wrinkle in the methodology reflects the fact that there exists a very real “lag time” between the perceived need for new capacity investment and the point in time where that capacity is actually available. That lag time may be on the order of 1-3 years, but is somewhat offset by anticipation among the producer community (i.e. plans and permits may be preliminarily started with an eye toward rising prices). For this reason, the model uses a one-year delay in bringing on new capacity. In other words, the cash “margin” test described above actually uses the equilibrium price from last year’s converged solution to bring on the new capacity instead of the price emerging out of this year’s solution.

The bottom line is that, in the model, there is a “balancing act” occurring which mirrors what happens in the real world. In this balancing act, any “shortening” of a mine curve (due to exhaustion of reserves at individual mines, for example, or due to MTM/VF reductions to capacity) will likely lead to somewhat higher prices as demand hits “higher” on a shorter curve. These higher prices, in turn, cause more steps on the cost curve to “see” an acceptable ROI, leading to capacity expansion for that step if any is available. The concept of this “balancing act” is important to understanding some of the results presented later in this report.

There are two other secondary methods by which capacity is added into the mine curves within the model. First, one of the inputs to the model is an assumption of future productivity growth for each of the more than 100 types of coal. In these runs, a productivity gain of 3% per year, somewhat lower than the historic average due to tougher mining conditions, was assumed for all of the Central Appalachian area. This is

important to capacity since, at a mine producing 1.0 million tons per year (mmtpy) and experiencing a 10% gain in tons per man-hour, the mine either could produce 1.1 mmtpy with the same workforce after the gain or could lay off approximately 9% of its workforce ($1/110\% = 91\%$) and produce the same 1.0 mmtpy with fewer workers. In the first case, we have a productivity-induced capacity increase. One of the model inputs involves our projection of what proportion of productivity gain goes toward capacity increase versus workforce reduction and, although the calculations are somewhat complicated, it works out that less than half of the productivity gain is going toward capacity in the model runs.

Second, there is a well-established pattern in the coalfields of mines that are running at their maximum capacity making small capacity gains (usually through equipment upgrades) even if the true ROI economics are not there to justify this “smaller than major expansion” level of capital investment. Accordingly, we have a test in the model that determines if a step was 100% used in the previous year and has at least 7 years of reserve life remaining. If both of these conditions are met, then the mine capacity is very slightly “stretched” for that step on the order of 1%-2% to reflect this real-world phenomenon.

Both of these secondary capacity effects (productivity and “stretch”) are allowed to occur before the economic “margin” test is made for bringing on major new expansion capital at a mine. The net effect is that a small amount of the “major capital” capacity expansion may be forestalled by the lesser amount of “creep” in capacity that occurs due to productivity gains and the “stretch” described above.

Since a major purpose of the study is to provide information for projecting economic differences between the separate scenarios modeled, we would like to know how much more or less capital is invested in new mining capacity for each scenario. We accomplish this by carefully tracking the exact type of mining for each new capacity addition brought on at each step on the mine cost curves. We then apply our estimate of capital investment per annual ton of new capacity (for that specific type of mining) to the total expansion tonnage of that type brought on in the model run. Our capital estimates are based on interviews with equipment manufacturers and coal producers as well as on published information regarding capital expenditures for new coal mines. Finally, we sum up these capital dollars across the different mining types and report the result by year by sub-region for each MTM/VF scenario.

On the electricity side, the NPM model brings on new baseload capacity in a manner very similar to the “margin” test procedure described for the UFEM model above. That is, since the NPM model is driven by dispatch bid costs (the major component of which is fuel cost for a coal-fired plant), a test is made against that dispatch bid cost. Whenever the wholesale price of electricity in a control area (most generally, a single utility) as measured by lambda cost exceeds the anticipated dispatch bid cost for a new gas-fired combined cycle (“new CC”) plant by a large enough “margin” to generate a criterion 10% ROI, then a new CC plant is built in that control area.

New peaking capacity is brought on automatically in the NPM model to satisfy a classical “reserve margin” calculation for each control area. In the model runs, we used a 10% reserve margin criterion which is somewhat lower than the historic regulated 15% required by many public utility commissions but is obviously higher than levels that currently exist in some portions of the country

Because new coal-fired plants were not considered a serious option over the past several years, the model has been set up to “automatically” bring on only gas-fired new capacity. However, in recent times the consideration of new coal-fired capacity (either expansion or grass-roots) has resurfaced. For this reason, in model runs for clients over the past year or so (until we build a module for actually making economic trade-offs between gas-fired and coal-fired new capacity), we simply add by hand a selected few coal plants in the model in control areas where new coal plants would be most likely. We spread these new coal additions across the next decade timed to the model’s signals that new capacity is needed. Those coal-fired by-hand additions are entered in the appropriate year before the model does its calculations of the need for the model-generated new gas-fired capacity. One of those hand-entered coal-fired facilities shows up in year 2009 in the VA sub-region in the results of new generating capacity shown later in this report.

III. Results

For both versions of the base case and for each of the four alternate mining regulatory scenarios (six cases in total), this study has generated model outputs for each year of the 2001-2010 period. These outputs form the basis for H&A’s projections under each scenario for each year for the following variables:

- Coal tonnage
- Direct coal employment
- Mine capacity capital expenditures
- Average coal price, fob mine
- Megawatt-Hours of generation
- Average wholesale price (lambda costs) of electricity
- Environmental clean-up equipment capital expenditures for utilities
- Electricity capacity investments by type (construction, equipment, etc.)
- Major coal mine operating costs by category
- Average U.S. wholesale price (lambda costs) of electricity

Except for the U.S. wholesale price of electricity and the major coal mine operating costs by category, all of these variable outputs are provided by study sub-region.

Although much of the detail by sub-region is primarily needed for EIS Phase 3 modeling (outside of this study) of total direct and indirect economic impact on the economies of the states being studied, those detailed results are presented in their entirety for the reader in the Appendices to this report. The Appendices are organized in the same order as the

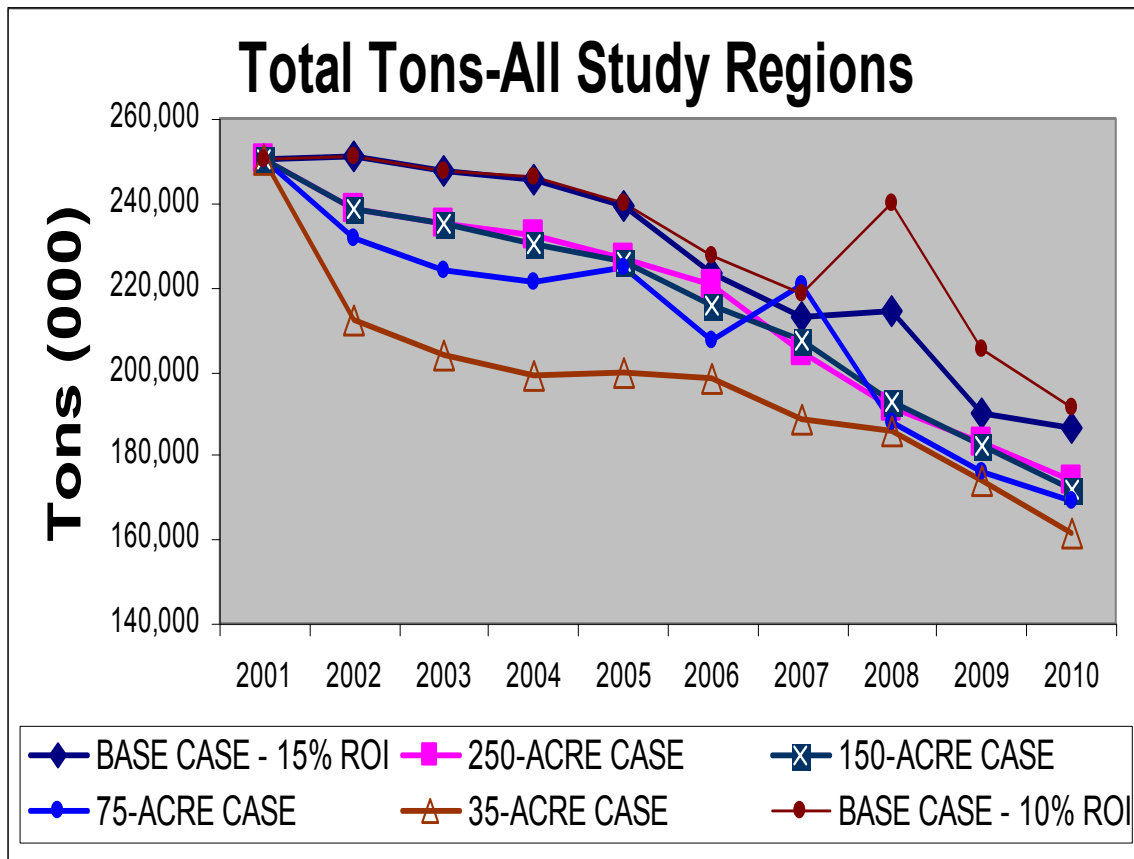
list immediately above. (Appendix A contains coal tonnage information, Appendix B coal employment numbers, etc.) All coal-production related parameters are reported by surface mining versus deep mining within each sub-region.

The remainder of this section of the report will focus on highlighting selected results, especially at a more aggregated level where appropriate, and providing descriptive and interpretive analysis of their meaning in the context of overall impacts of potential MTM/VF restrictions.

III.A. Coal Tonnage

Figure 4 presents a graph of the projected total coal tonnage by year from all of the MTM/VF directly-affected regions covered in this study. The numbers behind this graph are presented in the bottom section of Table A-1 in Appendix A.

Figure 4



There are several issues that arise from considering this graph. First, the general downward trend of total tonnage from the study region under all cases is a result we see across many modeling projects for different clients inside Hill & Associates. It is a reflection of the continuing economic and environmental adjustment of the coal

marketplace that has been occurring over the past few years in which Powder River Basin (PRB) coal from Wyoming has been gaining in market share while Appalachian coals in general have had declining market share. This is exacerbated toward the end of the 10-year study period by the fact that significant blocks of higher-quality Central Appalachian reserves are starting to be exhausted. The better-quality coals in this region are slowly but surely being mined out.

It is not the purpose of this MTM/VF study to delve into the general trend of PRB coal supplanting Appalachian coal – there are several good studies from government sources and from consultants covering that topic. Rather, it is sufficient here to note the trend and the fact that it will, of course, have a general bearing on this study since a higher level of demand over the decade of study would necessarily place more strain on the coal supply system from the area that may be restricted to some degree by MTM/VF regulations.

Second, consider the two versions of the Base Case (the top two lines through most of the graph). For the years 2002-2005 the 15% ROI Base Case and the 10% ROI Base Case fall virtually on top of each other so that there appears to be only one line and, in fact, there is only a miniscule difference between the graphs for those years. The reason for this congruence between the two cases in the first few years lies in the somewhat complicated real-world “balancing act” (discussed in the “Methodology” section above) in which capacity is both leaving and entering the mining cost-supply curve simultaneously. By examining the detailed model working files for each of the runs represented by a single point on the graph above, we have determined that for years 2001-2004, the entire region is expanding as fast as it can under the “Area Limits” which are determined by the amount of new expansion that an area of the coalfields can absorb in one year, given the labor force, transportation capabilities, etc. of the area.

During this early period, there is enough expansion capacity in the “lower” area of the curve(s) that the “Area Limit” is reached before either the 15% ROI or the 10% ROI limiting factor becomes controlling. In other words, all of the steps that are expanding until we reach the “Area Limit” are above 15% ROI, so that both the 10% and the 15% ROI criteria are met. Thus, both ROI cases experience the same capacity expansion and virtually identical model results.

Then, in 2005 enough of the low-cost steps have exhausted their low-cost reserves so that the “Area Limit” starts falling first between the 15% ROI threshold and the 10% ROI threshold and eventually higher than the 10% threshold. From this point forward, two things happen. First, we start seeing significantly more productive capacity available in the case where new investment needs only a 10% ROI. Since this tends to “flatten” the cost curve and “stretch” it to the right (imagine this happening to Figure 3), the market clearing price for coal will tend to be lower in the 10% ROI case as compared to the 15% ROI case, and the tonnage actually produced at this lower price will be somewhat higher in the 10% case.

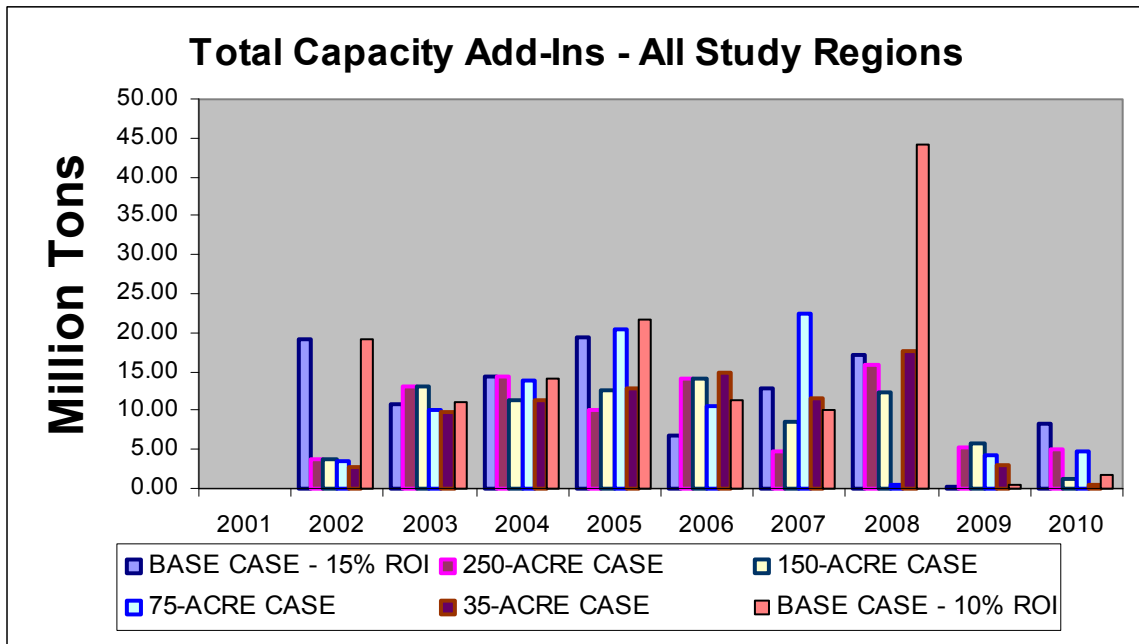
The second thing that happens as the “Area Limit” begins falling above one or both of the ROI limiting factors is that the actual cost curves in the 10% and 15% cases will start

diverging from each other in shape and level as more production is drawn from one than the other and more capacity is added (at different spots on the curve) to one versus the other. This second factor is important because a particular expansion that was economic under the 10% rule but not under the 15% rule is still available for expansion in a later year on the 15% curve as economics change over time. Thus, we frequently see some degree of “catching up” by the disadvantaged case in our model runs. This phenomenon does show up in Figure 4 above as we see the difference between the two versions of the Base Case going as high as 25 million tons in 2008 but then shrinking (the “catching up” phenomenon) down to roughly 5 million tons in 2010.

A very interesting indirect effect of possible MTM/VF restrictions becomes apparent as we consider the 25 million ton differential between the two versions of the Base Case in 2008. Remember that the setup assumptions included a likely EPA-mandated cut of 50% in Clean Air Act Phase 2 sulfur emission levels for year 2008, driven by the National Ambient Air Quality Standard for fine (2.5 micron) particulate matter. The indirect effect of the MTM/VF restrictions is that, to the extent that this aggressive changing of the mining rules does cause the coal mining investment community to perceive higher levels of investment risk and require a higher ROI, then the modeling results indicate that the production responsiveness of this high-quality portion of the coal industry (Central Appalachia produces almost all of the compliance coal from the eastern U.S.) is fairly severely dampened by the higher risk perception.

In other words, under “standard” investment perceptions in the Appalachian coalfields, the cut in allowed sulfur emissions along with the associated increase in demand for higher-quality, low-sulfur coals would ordinarily cause a surge in new capacity investment and associated economic development in Central Appalachia. However, given the three-way interplay between Appalachian coal mining costs, Powder River Basin coal mining costs and the utilities’ costs of installing new scrubbers, it turns out that this stimulus toward new mining capacity in Central Appalachia is highly vulnerable to perceptions of investment risk. This is illustrated in the 2008 portion of the bar graph shown below in Figure 5.

Figure 5



This bar chart presents the tonnage version of the capacity additions which are reflected in dollar investment numbers in the formal study output deliverable in Appendix C, Table C-1. The left bar of each year’s set is the 15% ROI Base Case, and the bar to the far right of each year’s set is the 10% ROI Base Case. In support of the discussion above, we see for 2008 that in the case where only a 10% ROI is required for new coal mining investment, approximately 2½ times as much new capacity is installed. The numbers in Appendix C in Table C-1 indicate that the capital required for these two tonnage bars are roughly \$320 million and \$800 million, respectively (constant 2001\$).

An additional point to note from Figure 5 is the substantial differentiation in year 2002 between the Base Case(s) on the one hand (about 19 million tons of new capacity) and the MTM/VF-affected cases (3-4 million tons) on the other hand. This is a direct result of the assumption, discussed in Section II.E above, of a “regrouping” by coal producers in the initial year of imposition of MTM/VF restrictions. In other words, during this initial year “regrouping” period, no ROI-driven major capital expansions are occurring in the MTM/VF-affected cases, and the 3-4 million tons of increased capacity comes totally from the productivity and “stretch” increments described in Section II.E above.

To some extent, the non-expansion in 2002 in the MTM/VF-affected cases may be causing somewhat higher expansion in later years (higher than what would have happened in the same case in those later years without the early-year reluctance to invest). Experience in running the H&A models has shown that a constraint such as this one-year “regrouping” non-expansion often results in a “pent-up” pressure which is released when the constraint is released. The exception to this rule is the situation where

a constraint of this type persists long enough for the competitive sources of supply (other coal fields) to over-expand and drive down overall prices on a sustained basis. However, this takes a few years to accomplish.

Turning now to the actual MTM/VF restricted cases in the tonnage production graph of Figure 4 near the start of this “Results” section, we see that all of the regulation-affected cases fall fairly uniformly below the Base Case(s), with the exception of the 75-Acre Case which will be discussed as a special situation later in this section. The fairly immediate separation between the curves in year 2002 is a function of three factors: (1) the assumption that any valley fill restrictions in a scenario are imposed instantaneously in 2002, (2) the “no grandfathering of existing operations” assumption discussed in Section II.C above, and (3) the one-year “regrouping” period during which no new ROI-driven capacity expansions occur as producers adjust to the new rules (as discussed in Section II.E above). Changing any one of these assumptions could have an impact on the timing and amount of separation between the curves, but the size of such an impact is uncertain without re-running the models because of the complicated interaction between “shortening” of the mine cost curves, price increases, ROI-driven capacity expansion, exhaustion of reserves at certain individual mines and competitive response from other coal fields such as the Powder River Basin and the Illinois Basin.

Table 3 below presents a brief synopsis (excluding the 75-Acre Case) of the general impact of the various levels of MTM/VF restriction as compared to the Base Case(s).

Table 3
Summary of Tonnage Impacts
(Excluding 75-Acre Case)

| <u>Time Period</u> | <u>Case</u> | <u>Total Study Region Annual Tonnage Loss vs. Base Case</u> |
|--------------------|-------------------------|--|
| 2001 - 2005 | 250-Acre/150-Acre Cases | 12 – 13 million tons (5% of Total Produc.) |
| | 35-Acre Case | 40 – 45 million tons (20% of Total Produc.) |
| 2006 - 2007 | 250-Acre Case | 3 - 8 million tons (2%-3% of Total Produc.) |
| | 150-Acre Case | 8 - 12 million tons (3%-5% of Total Produc.) |
| | 35-Acre Case | 25 – 30 million tons (10%-15% of Total Produc.) |
| 2008 | 250-Acre/150-Acre Cases | 12 – 48 million tons, depending on which Base Case (5%-20% of Total Produc.) |
| | 35-Acre Case | 16 – 55 million tons, depending on which Base Case (7%-23% of Total Produc.) |
| 2009 - 2010 | 250-Acre/150-Acre Cases | 8 - 20 million tons (4%-10% of Total Produc.) |
| | 35-Acre Case | 17 –30 million tons (8%-15% of Total Produc.) |

One of the more interesting results, easily observable in Figure 4, is that the 250-Acre and 150-Acre Cases fall virtually on top of each other except for a little separation in the 2006-2007 period. For this reason, the table above presents both of these cases as one entity for the other time periods. The primary reason for these congruent results is the similarity in the amount of reserve diminution for these two cases in the RTC results from Phase 1 of the EIS support work.

Until Phase 3 of the EIS support studies is completed, we cannot answer just how substantial is the impact of the tonnage loss shown in Table 3. However, by way of benchmark comparison, the lower end of this market loss (5%-10%) is about the impact on the nation-wide coal market that the Ozone/Fine Particle rules of the National Ambient Air Quality Standards are projected to have. The upper end of the above market loss (40%-50%) is the projected nation-wide coal market loss if Kyoto-based “Global Warming” CO₂ limits are imposed in the U.S.

Referring back to Figure 4, we see that the 75-Acre Case does not seem to fall cleanly into this neat hierarchical pattern (at least not in selected years). What happened – Why does this case bounce around so erratically?

The answer again involves this somewhat complicated real-world “balancing act” (discussed in the “Methodology” section above) in which capacity is both leaving and entering the mining cost-supply curve simultaneously. It was mentioned earlier that some of the reserves in Central Appalachia are becoming low enough that they will start being exhausted within the 10-year study period. In one respect, we might consider the 35-Acre Case, in which substantial reserves have been rendered unmineable, as simply accelerating that situation so that the graph of the 35-Acre Case in Figure 4 immediately starts out (in 2002) already on that lower track that the other cases eventually reach near the end of the study period. On this lower track, there simply are not enough expansion reserves available at low enough cost levels (either because they were initially sterilized in the 35-Acre Case by MTM/VF regulations or because they are exhausted through production in the other cases) to keep the total market tonnage up above 200 million annual tons.

Now consider the 75-Acre Case which falls on the “knife-edge” between the upper track and the lower track discussed above. The amount of reserves made unmineable in the 75-Acre Case is not so large as to immediately throw it into the same situation as the 35-Acre Case where, from the very beginning, there are not enough expansion reserves to keep up. Rather, there are just enough expansion reserves to respond to price signals exceeding the ROI investment criterion, but these reserves (as well as the non-expansion reserves supporting existing capacity) have been cut very thin by the MTM/VF rules. Thus, many steps on the mining cost curve(s) have their reserves exhausting fast and furiously after the first two or three years. As so many reserves exhaust rapidly, strong price signals are sent for expansion; so strong, in fact, that quite a lot of new capacity surges in, and the tonnage curve actually bends upward momentarily.

However, both the expansion reserves and the reserves supporting existing capacity are again so thin due to the MTM/VF regulations that they continue to exhaust at a fast and furious pace, driving productive capacity down again. As the cycle repeats, strong price signals spur another big surge in expansion which turns the production tonnage curve upward again, only to have it sag the next year as thin reserves race toward exhaustion. Finally, there is enough exhaustion that the case becomes very similar to the 35-Acre Case where there simply are not enough expansion reserves to keep up, even for one year.

In summary, this is analogous to an attempt to fill a wooden trough with water by pouring in large bucketfuls, but there are many small holes in the sides of the wooden trough. With each bucketful poured in, we can momentarily raise the trough's water level, but it quickly runs back out of the holes. After a while, the reservoir from which we are drawing the bucketfuls becomes lower and lower, so that eventually we can only draw half-bucketfuls or quarter-bucketfuls. At the end of the day, we simply cannot overcome the outflow but can only slow down the continuing drop in water level.

There are two ways to look at this type of "knife-edge" effect. One way is to dismiss it as a modeling phenomenon and say that if we had chosen a slightly different ROI threshold for this case or had used 80 acres as the criterion instead of 75 acres, then we might very easily have fallen on one side or the other of the "knife-edge." The other approach (and the one we prefer) is to recognize that the model is telling us something. There is, in fact, a zone in here somewhere (that we have bracketed with the span of scenarios) where the market signals can get somewhat erratic because there is just enough resource in the producer segment of the coal industry to respond to price signals, albeit inadequately.

III.B. Coal Prices

Having discussed price signals at some length, let's turn our attention to the actual price outputs from the models that correspond to the tonnage results. Figures 6a and 6b below presents the weighted average prices for the coal totals of Figure 4. Again, it is important to note that these are short-term market clearing prices for new business and do not include any older "out of market" contract prices.

Figure 6a

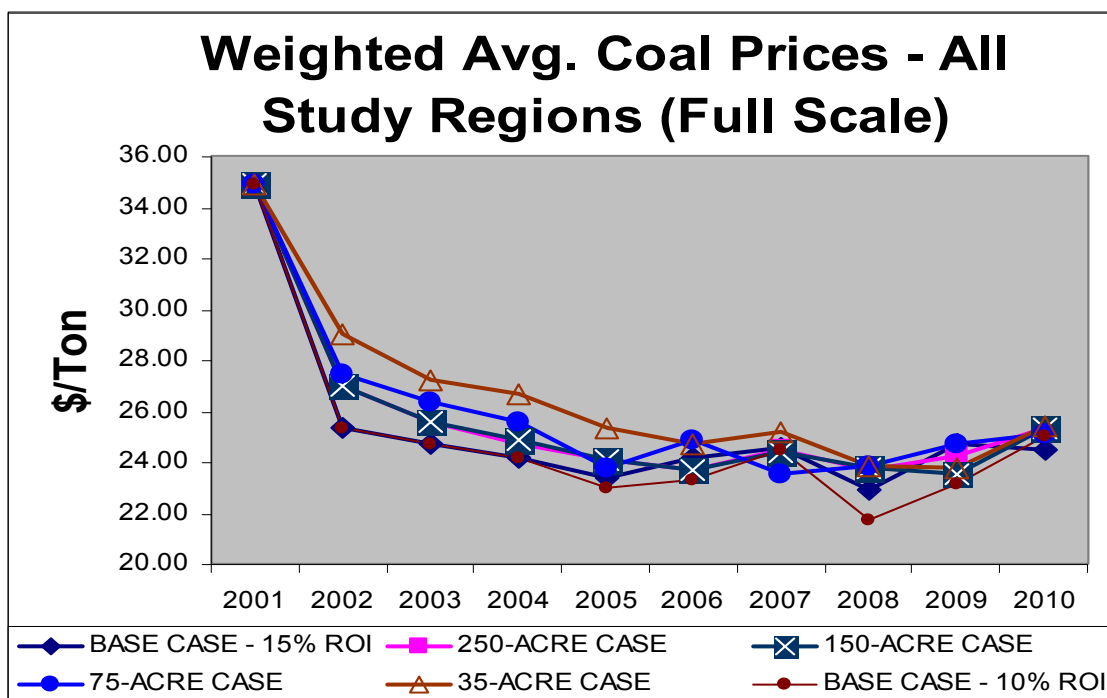
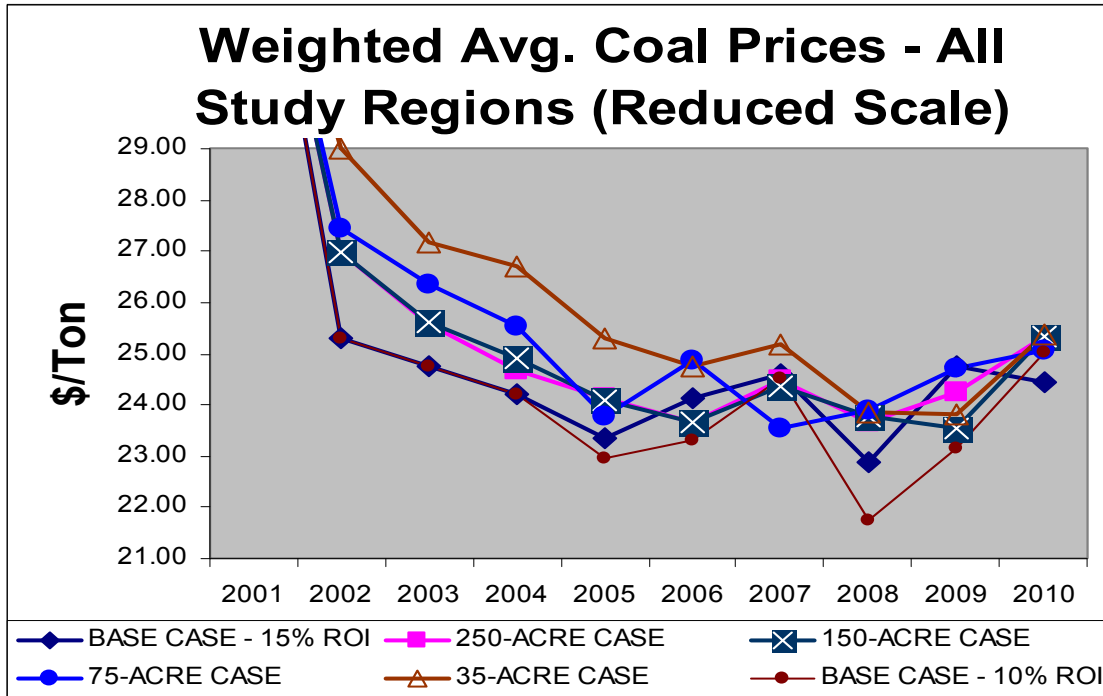


Figure 6a is presented on a scale of \$20 to \$36 per ton in order to show that the fall from the “once-in-a-quarter-century” market of 2001 is likely to be two to three times as large as the price differentials between the various MTM/VF scenarios. However, it should be noted that the reason for the large initial drop on the graph is due to the fact that the mid-2001 market was operating near the far right-hand edge of the cost curves. Referring back to Figure 3 from the “Methodology” section of this report, we can see that if we are very near the right-hand edge of the curve, then we can experience prices that are quite high. However, since the curve is so steep here, even a small increase in capacity lower on the curve (as producers attempt to produce more to take advantage of high prices) can “stretch” the curve to the right enough to cause a dramatically large drop in market clearing price. In other words, on a steep curve it does not take much horizontal movement to slide down a long way vertically.

On the other hand, the price differentials between the MTM/VF scenarios are occurring down on the flatter portion of the Figure 3 curve and represent perhaps more significant tonnage impacts. We see this on a gross scale by considering that the tonnage differences discussed above between scenarios is often on the order of 15-50 million annual tons, and this magnitude of tonnage is associated with price differentials in the \$2.50-\$3.50 per ton range. This means that we are operating on a less steep portion of the curve where large horizontal capacity movements correspond to lesser vertical movements in cost.

In order to focus on the subject of this study, Figure 6b is presented as identical to Figure 6a except that the scale is limited to \$21 to \$29 per ton to more easily visualize the roughly \$2.50-\$3.50 differences between scenario results.

Figure 6b



As we would expect, the prices shown in Figure 6b are almost exactly the inverse of the tonnage graph of Figure 4. That is, the lowest prices generally occur for the least restricted Base Case(s) where the tonnages from Figure 4 are higher. However, as the “catching up” phenomenon occurs (see earlier discussion), we would expect to see some crossing over of the prices as the relative shortness of supply for the more restricted cases eventually sends some pretty strong price signals. In fact, we see a very clear trend that the largest coal price differentials between scenarios occur immediately after the implementation of MTM/VF restrictions, and then these differences attenuate over time as the “catching up” phenomenon occurs. As discussed earlier, the 2008 “bump” in the graph is a measure of the coal marketplace response to the PM2.5-driven cut in SO₂ limits.

It is significant to note that despite (1) continuing productivity gains, which serve both to lower individual points on the Figure 3 cost curve and also to stretch the entire curve to the right, and (2) lower overall tonnages in later years, which means demand crosses farther to the left on the Figure 3 cost curve, we still see prices in Figure 6b holding relatively flat in the second five years of the study period. This is an indication of fairly strong prices (compared, say, to other areas of the coalfields) due to shortness of supply,

even in the Base Case(s) which experience some reserve exhaustion near the end of the 10-year study period.

Finally, as we would expect, the 10% ROI Base Case prices are lower than the 15% ROI Base Case prices since there is more capacity expansion and therefore more supply in the supply/demand balance in the 10% case.

III.C. Coal Mining Employment

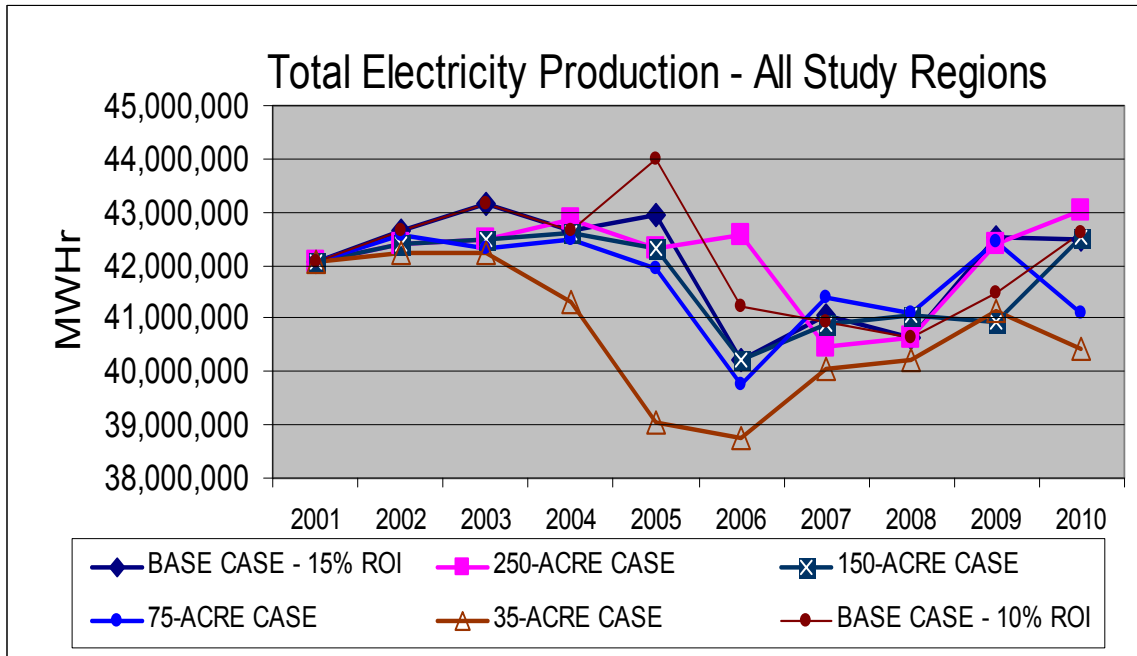
Before we leave the coal side of the results discussion, a couple of comments about the direct coal employment tables in Appendix B are appropriate. First, these “direct” employment numbers are very narrowly defined as really directly “in the mine” employees and would need a scale-up factor of perhaps 2.0 to match up with the officially reported state “coal mining employment” numbers. For example, we are showing an all-region total of 17,845 “direct” employees for 2001 in Appendix B, but Hill & Associates’ own monthly short-term coal outlook lists official state coal mining employment numbers for July 2001 of approximately 3,900 for northern West Virginia, 12,100 for southern West Virginia, 12,500 for eastern Kentucky and 5,600 for Virginia. This total of more than 34,000 “official” coal mining employees for one summer month is roughly twice our modeling estimate of “direct” coal mining employees average for the year.

Second, although the last year of the study period shows a maximum “direct” employment loss of a little over 1,000 employees, the loss of employment in some mid-years can exceed 3,500 employees (e.g. comparing the 75-Acre Case with the 10% ROI Base Case for year 2008).

III.D. Electricity Generation Within the Study Region

Turning now to the electricity results from the integrated coal and electricity modeling system, Figure 7 below presents the electricity produced from the total study region under each scenario. The numbers behind this graph are presented in the bottom section of Table E-1 in Appendix E.

Figure 7



Two things are immediately apparent from Figure 7. First, there is a very loose general correlation with the coal results, in that the less restricted cases (the Base Cases and the 250-Acre Case) with their generally lower coal prices tend to be the ones showing higher electricity production, while the more restricted cases such as the 35-Acre Case with higher coal prices show lower electricity generation. Second, the electricity results are definitely NOT an exact mirror image of the coal results.

Upon reflection, this second point is not at all surprising. The coalfields included in the study region do, of course, supply the electric generating plants sitting on top of the coal, but they also supply many other electric generating stations outside of the study region. The issue of who wins and who loses the dispatch wars on the electric grid is an extremely complicated one and is one of the primary reasons why we run an integrated coal and electricity modeling system. There are many thresholds at individual generating stations where a change in coal prices for a certain quality of coal can result in the decision to install a scrubber, for example, and burn high-sulfur Pennsylvania or Ohio coal.

Particular differences between the electricity production graph of Figure 7 and the coal production graph of Figure 4 include the following:

- Unlike the coal results, the electricity results do not show the largest spread between scenarios immediately after the MTM/VF rules are implemented. Rather, the largest spread of electric generation across scenarios occurs after four or five years.
- The biggest sensitivity for electric generation appears to occur in response to the 19-State SIP Call for NO_x in 2005, while the coal tonnage maximum sensitivity seems to be oriented around the PM2.5-driven SO₂ cuts in 2008.
- While the absolute magnitude of coal tonnage impacts can be as high as 20%-25% of total production (see Table 3 above) and more typically runs a spread of 8%-15% difference between the most-restrictive and least-restrictive cases in most years; the electric generation spreads are more in the 2%-6% range in most years, going only to a maximum of about 11% of total production in 2005.
- The 250-Acre and 150-Acre Cases do not fall on top of each other in the electricity graph. Rather, the 250-Acre Case shows substantially higher electricity generation inside the study region than the 150-Acre Case for some of the mid-years and late-years.
- There appears to be significantly more cross-over between the scenarios in the electricity results. That is, the scenarios do not line up monotonically from least restrictive to most restrictive as they seem to do for coal tonnage (except for the 75-Acre Case in the coal results).

In summary, while we have both coal production and electricity production that can shift “just over the border” outside the study region and therefore not be included in the results reported here, there are generally wide quality differences between Pennsylvania/Ohio coal, for example, and Central Appalachian coal that limit the amount of direct substitution without equipment or allowance costs. Thus, the coal results tend to be more directly related to the severity of MTM/VF restriction. On the other hand, electricity as a product is so extraordinarily homogeneous that the shifting of power generation across the study region’s border is a significant factor that disrupts the direct relationship between coal supply reduction and electric generation within the study region.

III.E. Electricity Prices

Figures 8a and 8b presents the model output electricity prices associated with the generation discussed above. The numbers behind the graph are shown in the bottom section of Table F-1 in Appendix F.

Figure 8a

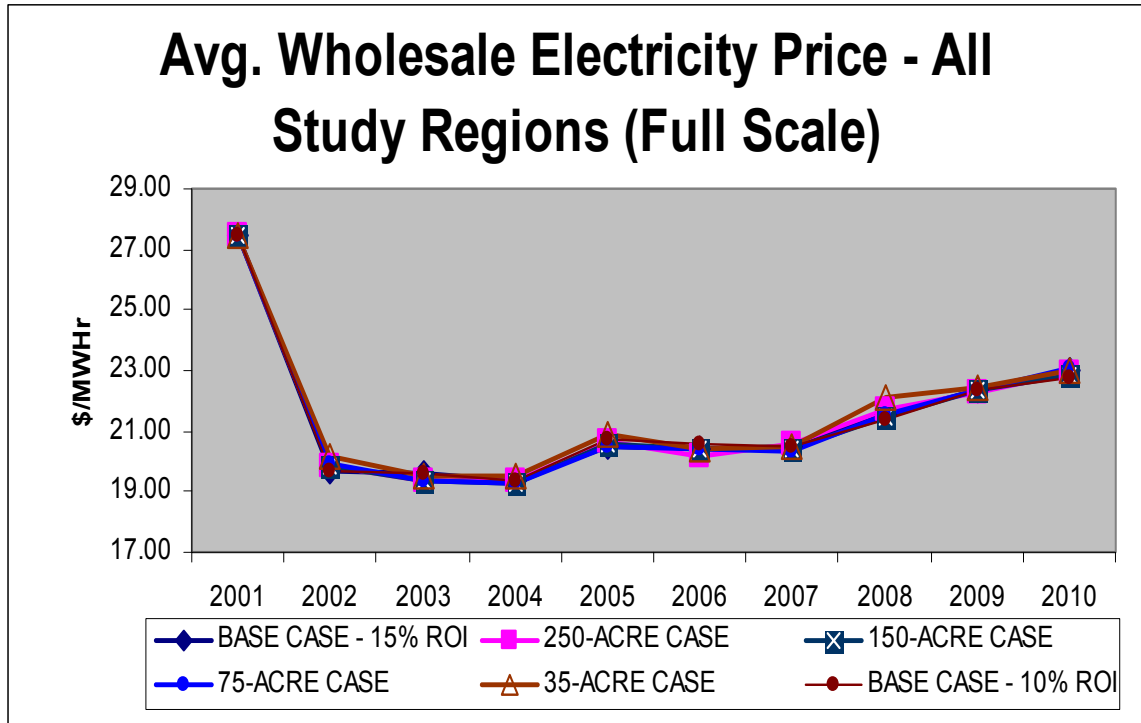
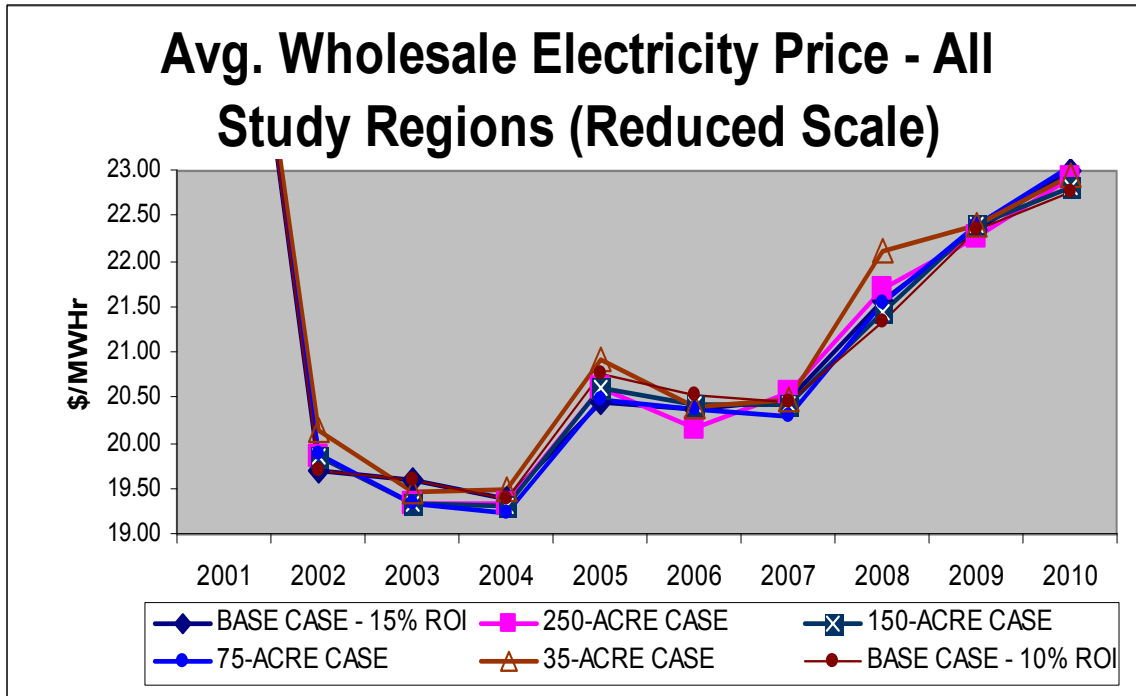


Figure 8a is presented on a scale of \$17.00 to \$29.00 dollars (constant 2001\$) per megawatt-hour. This illustrates that the size of the electricity price drop that will accompany the expected coal market “bust” following the current “once-in-a-quarter-century” market boom is several times larger than the electricity price sensitivity to the MTM/VF scenarios.

In order to focus on the topic of this study, Figure 8b is identical to Figure 8a except that the scale is reduced to \$19.00 to \$23.00 per megawatt-hour.

Figure 8b



Even on this scale, it is evident that the electricity prices are quite insensitive to the MTM/VF restrictions, showing differences of only 1%-2%, or 3% at the maximum. This is a simple mechanical function since the models solve for the market clearing price (lambda cost) of electricity for each “control area” (most generally, a single utility). This mirrors the real world in which only one lambda cost exists at any one time in a competitive section of the transmission grid. Since this lambda cost is defined as the dispatch bid (assumed to be actual variable dispatch cost in the model) of the very last, or highest-cost, generator to be dispatched in any time period, that generator may or may not be affected by the price of coal from the MTM/VF study region. In fact, that last generator may be a gas-fired plant in some time periods.

Thus, while we may be calculating a weighted average of AEP and APS prices for the WV_N (northern West Virginia) sub-region, for example, each of those utilities span areas and generators outside of the study area as well as inside. Accordingly, the effects of MTM/VF restrictions are greatly diluted as we consider the wholesale price of electricity on the competitive transmission grid.

It is important to note that wholesale electricity prices, as modeled by lambda costs, may not be reflective of retail electricity prices, especially in a regulated electric utility environment. In particular, consider the hypothetical situation where a gas-fired plant is the “last” plant dispatched, and its dispatch cost is determining the price of electricity. Theoretically, we might raise the cost of many coal-fired plants lower on the dispatch cost curve and thereby substantially reduce the profitability of those coal plants (and

perhaps the total utility) operating against the electricity price still being established by the gas-fired plant. The model would still yield the same lambda cost of the “last” generator, but the utility might very well file for a regulated rate increase due to higher average costs and reduced overall profitability of its entire portfolio of generators.

The overall U.S. average wholesale electricity price (lambda cost) for each scenario, needed by the anticipated model to be used in EIS support Phase 3, is listed in Table J-1 in Appendix J.

III.F. Capital Expenditures at Electric Plants

Table G-1 in Appendix G shows that, in general, there is no significant difference across MTM/VF scenarios in capital expenditures for environmental clean-up equipment at coal-fired generating plants. The one exception is in year 2004 when all of the MTM/VF restricted scenarios spend about \$15 million (constant 2001\$) more than the level of \$18-\$19 million in the Base Case(s).

Detailed examination of the plant-level model output reveals that this additional \$15 million dollars is due to the fact that one large plant grouping in the model, Units 1-3 at AEP’s John E. Amos Plant, only partially scrubs (about 55%) in the Base Case(s) in 2004. In other words, at the coal prices in the Base Case(s), the best economics are to install scrubbing on only 55% of that unit grouping, and the remainder remains unscrubbed. However, at the coal prices of each of the MTM/VF restricted cases, the best economics are to install 100% scrubbing at this unit grouping at the correspondingly higher capital cost.

Turning to capital expenditures for new generating capacity, we see from Tables H-1 in Appendix H that the models call for new capacity only in the Virginia sub-region of the study area. Summation across the years reveals that the total capital investment (constant 2001\$) across the entire 10-year period is about \$1,160 million for New Combined-Cycle gas-fired baseload units, plus about \$300 million for New Gas-Turbine peaking units and around \$700 million for a new coal-fired generating station. This \$2.2 billion capital investment adds about 3400 MW of baseload capacity and roughly 1200 MW of peaking capacity.

Finally, the model anticipated to be used in EIS support Phase 3 requires a one-time breakdown of major coal mine operating costs by category. Those numbers are presented in Table I-1 in Appendix I.

APPENDICES

Table A-1

Total Tons - Surface and Deep Mines Combined ProductionTons (000)

| <u>Region</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| KY 1 | | | | | | | | | | |
| BASE CASE - 10% ROI | 37,850 | 37,112 | 36,823 | 33,002 | 31,176 | 33,170 | 33,894 | 41,195 | 33,984 | 29,059 |
| BASE CASE - 15% ROI | 37,850 | 37,112 | 36,823 | 33,002 | 31,422 | 32,007 | 33,767 | 35,551 | 31,630 | 26,355 |
| 250-ACRE CASE | 37,850 | 36,193 | 36,774 | 33,701 | 31,964 | 30,886 | 29,025 | 29,686 | 31,040 | 25,977 |
| 150-ACRE CASE | 37,850 | 36,235 | 36,764 | 33,661 | 31,855 | 30,769 | 28,803 | 29,498 | 30,731 | 26,092 |
| 75-ACRE CASE | 37,850 | 35,210 | 34,894 | 31,764 | 29,911 | 26,389 | 26,460 | 25,917 | 27,287 | 23,130 |
| 35-ACRE CASE | 37,850 | 33,392 | 27,389 | 25,152 | 24,414 | 24,519 | 22,649 | 26,140 | 27,617 | 23,034 |
| KY 2 | | | | | | | | | | |
| BASE CASE - 10% ROI | 49,100 | 46,844 | 46,224 | 46,608 | 40,984 | 32,500 | 36,086 | 34,865 | 28,029 | 23,534 |
| BASE CASE - 15% ROI | 49,100 | 46,844 | 46,074 | 46,599 | 41,518 | 33,638 | 35,576 | 35,765 | 27,881 | 27,768 |
| 250-ACRE CASE | 49,100 | 42,903 | 42,522 | 42,398 | 43,787 | 34,633 | 31,040 | 33,043 | 27,504 | 23,835 |
| 150-ACRE CASE | 49,100 | 42,903 | 42,482 | 43,177 | 43,426 | 34,093 | 30,769 | 31,944 | 25,817 | 23,319 |
| 75-ACRE CASE | 49,100 | 42,746 | 42,880 | 43,419 | 42,577 | 36,946 | 32,564 | 30,616 | 24,684 | 26,238 |
| 35-ACRE CASE | 49,100 | 41,361 | 40,668 | 42,055 | 43,418 | 36,341 | 33,160 | 29,975 | 23,527 | 21,542 |
| KY 3 | | | | | | | | | | |
| BASE CASE - 10% ROI | 1,690 | 1,575 | 1,407 | 1,406 | 1,114 | 844 | 1,020 | 665 | 1,077 | 1,106 |
| BASE CASE - 15% ROI | 1,690 | 1,575 | 1,407 | 1,406 | 1,114 | 1,035 | 1,023 | 993 | 1,104 | 1,106 |
| 250-ACRE CASE | 1,690 | 1,708 | 1,552 | 1,357 | 1,084 | 825 | 999 | 1,003 | 1,134 | 1,136 |
| 150-ACRE CASE | 1,690 | 1,708 | 1,552 | 1,531 | 1,064 | 995 | 1,003 | 1,114 | 1,136 | 1,207 |
| 75-ACRE CASE | 1,690 | 1,708 | 1,675 | 1,562 | 1,073 | 1,005 | 993 | 1,124 | 1,146 | 1,186 |
| 35-ACRE CASE | 1,690 | 1,668 | 1,672 | 1,429 | 1,098 | 1,108 | 1,132 | 1,072 | 912 | 982 |
| KY 4 | | | | | | | | | | |
| BASE CASE - 10% ROI | 90 | 120 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |
| BASE CASE - 15% ROI | 90 | 120 | 50 | 0 | 0 | 0 | 0 | 0 | 40 | 41 |
| 250-ACRE CASE | 90 | 81 | 90 | 0 | 0 | 0 | 0 | 0 | 40 | 41 |
| 150-ACRE CASE | 90 | 81 | 80 | 0 | 0 | 0 | 0 | 0 | 40 | 41 |
| 75-ACRE CASE | 90 | 81 | 30 | 0 | 0 | 0 | 0 | 0 | 40 | 41 |
| 35-ACRE CASE | 90 | 51 | 41 | 41 | 0 | 0 | 40 | 0 | 40 | 41 |
| WV C | | | | | | | | | | |
| BASE CASE - 10% ROI | 31,460 | 29,662 | 30,302 | 30,078 | 28,493 | 33,809 | 23,213 | 23,099 | 12,488 | 13,676 |
| BASE CASE - 15% ROI | 31,460 | 29,662 | 30,447 | 30,018 | 26,772 | 32,447 | 21,555 | 16,371 | 13,869 | 18,263 |
| 250-ACRE CASE | 31,460 | 30,761 | 30,520 | 27,994 | 23,996 | 28,024 | 32,083 | 16,982 | 15,033 | 11,166 |
| 150-ACRE CASE | 31,460 | 30,761 | 30,520 | 29,272 | 23,946 | 28,024 | 32,093 | 17,705 | 14,478 | 10,831 |
| 75-ACRE CASE | 31,460 | 28,545 | 25,300 | 24,905 | 23,585 | 27,747 | 31,807 | 19,847 | 13,850 | 10,130 |
| 35-ACRE CASE | 31,460 | 22,375 | 22,724 | 22,994 | 22,210 | 23,031 | 10,814 | 11,092 | 8,837 | 8,495 |
| WV E | | | | | | | | | | |
| BASE CASE - 10% ROI | 890 | 658 | 679 | 699 | 648 | 739 | 761 | 782 | 1,004 | 1,026 |
| BASE CASE - 15% ROI | 890 | 658 | 679 | 699 | 720 | 740 | 761 | 782 | 1,004 | 1,026 |
| 250-ACRE CASE | 890 | 864 | 679 | 699 | 720 | 740 | 761 | 782 | 1,004 | 1,026 |
| 150-ACRE CASE | 890 | 864 | 679 | 699 | 720 | 740 | 761 | 782 | 943 | 1,025 |
| 75-ACRE CASE | 890 | 864 | 823 | 699 | 720 | 740 | 761 | 782 | 1,004 | 1,026 |
| 35-ACRE CASE | 890 | 864 | 884 | 843 | 713 | 724 | 734 | 745 | 895 | 844 |

Table A-1 (cont.)

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WV N | | | | | | | | | | |
| BASE CASE - 10% ROI | 35,080 | 39,019 | 42,631 | 44,639 | 46,765 | 48,120 | 47,144 | 46,330 | 41,430 | 42,893 |
| BASE CASE - 15% ROI | 35,080 | 39,019 | 42,631 | 44,639 | 46,765 | 48,241 | 47,147 | 44,586 | 40,898 | 41,454 |
| 250-ACRE CASE | 35,080 | 35,767 | 38,943 | 43,151 | 45,479 | 47,120 | 46,842 | 43,016 | 42,515 | 41,380 |
| 150-ACRE CASE | 35,080 | 35,667 | 38,943 | 43,222 | 45,479 | 47,120 | 46,842 | 43,016 | 42,495 | 41,379 |
| 75-ACRE CASE | 35,080 | 35,308 | 38,945 | 43,244 | 47,417 | 49,297 | 49,118 | 44,566 | 43,851 | 42,943 |
| 35-ACRE CASE | 35,080 | 34,958 | 38,965 | 43,244 | 47,581 | 50,099 | 50,098 | 47,175 | 45,025 | 39,467 |
| WV S | | | | | | | | | | |
| BASE CASE - 10% ROI | 5,750 | 5,413 | 4,431 | 1,849 | 1,477 | 1,117 | 1,127 | 1,064 | 544 | 554 |
| BASE CASE - 15% ROI | 5,750 | 5,413 | 4,431 | 1,849 | 1,477 | 1,117 | 1,127 | 1,064 | 544 | 554 |
| 250-ACRE CASE | 5,750 | 5,238 | 3,211 | 1,159 | 838 | 788 | 788 | 685 | 185 | 185 |
| 150-ACRE CASE | 5,750 | 5,308 | 3,251 | 1,159 | 838 | 788 | 788 | 365 | 185 | 185 |
| 75-ACRE CASE | 5,750 | 5,238 | 3,703 | 1,882 | 1,530 | 1,190 | 1,221 | 1,252 | 1,283 | 1,314 |
| 35-ACRE CASE | 5,750 | 4,499 | 3,417 | 1,233 | 553 | 513 | 529 | 539 | 550 | 560 |
| WV SW | | | | | | | | | | |
| BASE CASE - 10% ROI | 61,190 | 62,379 | 55,381 | 58,943 | 66,136 | 53,564 | 50,552 | 69,764 | 65,887 | 57,483 |
| BASE CASE - 15% ROI | 61,190 | 62,379 | 55,381 | 58,923 | 66,682 | 50,323 | 46,895 | 56,022 | 50,730 | 46,768 |
| 250-ACRE CASE | 61,190 | 58,800 | 53,326 | 51,634 | 51,662 | 54,304 | 38,060 | 42,529 | 42,354 | 46,852 |
| 150-ACRE CASE | 61,190 | 58,790 | 53,216 | 47,398 | 51,052 | 50,086 | 41,243 | 44,652 | 44,252 | 45,551 |
| 75-ACRE CASE | 61,190 | 55,018 | 47,253 | 43,721 | 51,096 | 40,508 | 52,699 | 39,828 | 41,437 | 41,014 |
| 35-ACRE CASE | 61,190 | 45,891 | 40,083 | 32,996 | 33,663 | 40,485 | 45,606 | 45,100 | 45,194 | 44,152 |
| All WV | | | | | | | | | | |
| BASE CASE - 10% ROI | 134,370 | 137,131 | 133,423 | 136,208 | 143,518 | 137,349 | 122,798 | 141,038 | 121,352 | 115,633 |
| BASE CASE - 15% ROI | 134,370 | 137,131 | 133,568 | 136,128 | 142,415 | 132,868 | 117,484 | 118,824 | 107,044 | 108,066 |
| 250-ACRE CASE | 134,370 | 131,429 | 126,678 | 124,638 | 122,695 | 130,977 | 118,534 | 103,993 | 101,090 | 100,608 |
| 150-ACRE CASE | 134,370 | 131,389 | 126,608 | 121,749 | 122,035 | 126,758 | 121,727 | 106,520 | 102,353 | 98,971 |
| 75-ACRE CASE | 134,370 | 124,971 | 116,024 | 114,451 | 124,348 | 119,482 | 135,606 | 106,274 | 101,424 | 96,426 |
| 35-ACRE CASE | 134,370 | 108,586 | 106,074 | 101,311 | 104,720 | 114,852 | 107,781 | 104,651 | 100,500 | 93,519 |
| All E. KY | | | | | | | | | | |
| BASE CASE - 10% ROI | 88,730 | 85,651 | 84,503 | 81,016 | 73,273 | 66,513 | 71,000 | 76,725 | 63,090 | 53,739 |
| BASE CASE - 15% ROI | 88,730 | 85,651 | 84,503 | 81,008 | 74,053 | 66,680 | 70,367 | 72,310 | 60,655 | 55,270 |
| 250-ACRE CASE | 88,730 | 80,885 | 80,938 | 77,456 | 76,835 | 66,343 | 61,064 | 63,732 | 59,718 | 50,989 |
| 150-ACRE CASE | 88,730 | 80,927 | 80,878 | 78,369 | 76,345 | 65,857 | 60,576 | 62,556 | 57,723 | 50,658 |
| 75-ACRE CASE | 88,730 | 79,745 | 79,479 | 76,745 | 73,561 | 64,340 | 60,017 | 57,656 | 53,157 | 50,595 |
| 35-ACRE CASE | 88,730 | 76,472 | 69,769 | 68,677 | 68,930 | 61,967 | 56,981 | 57,186 | 52,095 | 45,599 |
| VA | | | | | | | | | | |
| BASE CASE - 10% ROI | 27,200 | 28,032 | 29,777 | 28,625 | 22,886 | 23,265 | 24,662 | 22,212 | 21,061 | 22,254 |
| BASE CASE - 15% ROI | 27,200 | 28,032 | 29,777 | 28,516 | 23,013 | 23,929 | 25,132 | 23,123 | 22,491 | 23,071 |
| 250-ACRE CASE | 27,200 | 26,463 | 27,643 | 29,980 | 27,182 | 23,020 | 24,702 | 23,818 | 22,174 | 22,729 |
| 150-ACRE CASE | 27,200 | 26,463 | 27,643 | 30,031 | 27,390 | 23,027 | 24,768 | 23,772 | 21,961 | 22,116 |
| 75-ACRE CASE | 27,200 | 26,802 | 28,498 | 30,141 | 26,690 | 23,551 | 25,090 | 24,269 | 21,735 | 22,367 |
| 35-ACRE CASE | 27,200 | 26,775 | 27,722 | 29,178 | 26,032 | 21,416 | 24,089 | 23,788 | 21,300 | 22,086 |
| All Regions | | | | | | | | | | |
| BASE CASE - 10% ROI | 250,300 | 250,814 | 247,703 | 245,849 | 239,677 | 227,127 | 218,460 | 239,975 | 205,504 | 191,626 |
| BASE CASE - 15% ROI | 250,300 | 250,814 | 247,698 | 245,651 | 239,481 | 223,477 | 212,983 | 214,257 | 190,191 | 186,407 |
| 250-ACRE CASE | 250,300 | 238,777 | 235,258 | 232,074 | 226,711 | 220,340 | 204,300 | 191,543 | 182,983 | 174,326 |
| 150-ACRE CASE | 250,300 | 238,779 | 235,128 | 230,150 | 225,770 | 215,642 | 207,071 | 192,847 | 182,038 | 171,744 |
| 75-ACRE CASE | 250,300 | 231,518 | 224,000 | 221,338 | 224,598 | 207,374 | 220,713 | 188,199 | 176,315 | 169,388 |
| 35-ACRE CASE | 250,300 | 211,833 | 203,565 | 199,165 | 199,682 | 198,235 | 188,852 | 185,625 | 173,895 | 161,203 |

Table A-2

**Total Tons - Surface Mines Only
ProductionTons (000)**

| <u>Region</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| KY 1 | | | | | | | | | | |
| BASE CASE - 10% ROI | 17,410 | 19,041 | 18,258 | 14,578 | 13,329 | 13,415 | 13,735 | 14,421 | 11,951 | 9,717 |
| BASE CASE - 15% ROI | 17,410 | 19,041 | 18,258 | 14,578 | 14,078 | 13,659 | 13,740 | 12,587 | 10,910 | 9,103 |
| 250-ACRE CASE | 17,410 | 16,935 | 17,523 | 14,972 | 13,457 | 13,230 | 11,498 | 9,649 | 8,275 | 7,339 |
| 150-ACRE CASE | 17,410 | 16,925 | 17,513 | 14,932 | 13,348 | 13,195 | 11,398 | 9,591 | 8,226 | 7,299 |
| 75-ACRE CASE | 17,410 | 15,865 | 15,378 | 13,034 | 10,100 | 7,720 | 6,821 | 6,104 | 4,996 | 3,830 |
| 35-ACRE CASE | 17,410 | 13,370 | 7,502 | 5,915 | 4,087 | 3,366 | 3,143 | 2,486 | 1,575 | 1,689 |
| KY 2 | | | | | | | | | | |
| BASE CASE - 10% ROI | 19,470 | 19,130 | 16,819 | 13,982 | 12,010 | 11,897 | 12,575 | 10,314 | 11,194 | 10,361 |
| BASE CASE - 15% ROI | 19,470 | 19,130 | 16,819 | 13,982 | 13,544 | 12,698 | 12,080 | 13,024 | 11,277 | 10,283 |
| 250-ACRE CASE | 19,470 | 15,784 | 14,819 | 12,796 | 12,664 | 10,218 | 9,427 | 8,397 | 7,663 | 7,606 |
| 150-ACRE CASE | 19,470 | 15,784 | 14,779 | 13,370 | 12,235 | 9,677 | 8,967 | 8,217 | 7,493 | 7,536 |
| 75-ACRE CASE | 19,470 | 15,576 | 14,336 | 12,935 | 9,617 | 9,746 | 8,535 | 8,187 | 8,435 | 8,031 |
| 35-ACRE CASE | 19,470 | 13,370 | 11,405 | 8,824 | 7,876 | 7,002 | 6,456 | 6,349 | 6,456 | 7,157 |
| KY 3 | | | | | | | | | | |
| BASE CASE - 10% ROI | 1,020 | 819 | 644 | 634 | 331 | 50 | 201 | 30 | 312 | 338 |
| BASE CASE - 15% ROI | 1,020 | 819 | 644 | 634 | 331 | 221 | 205 | 205 | 336 | 338 |
| 250-ACRE CASE | 1,020 | 952 | 788 | 603 | 300 | 30 | 201 | 205 | 336 | 338 |
| 150-ACRE CASE | 1,020 | 952 | 788 | 778 | 300 | 201 | 205 | 316 | 338 | 409 |
| 75-ACRE CASE | 1,020 | 952 | 901 | 778 | 300 | 201 | 205 | 316 | 338 | 409 |
| 35-ACRE CASE | 1,020 | 912 | 898 | 635 | 294 | 294 | 314 | 254 | 144 | 214 |
| KY 4 | | | | | | | | | | |
| BASE CASE - 10% ROI | 80 | 120 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |
| BASE CASE - 15% ROI | 80 | 120 | 50 | 0 | 0 | 0 | 0 | 0 | 40 | 41 |
| 250-ACRE CASE | 80 | 81 | 90 | 0 | 0 | 0 | 0 | 0 | 40 | 41 |
| 150-ACRE CASE | 80 | 81 | 80 | 0 | 0 | 0 | 0 | 0 | 40 | 41 |
| 75-ACRE CASE | 80 | 81 | 30 | 0 | 0 | 0 | 0 | 0 | 40 | 41 |
| 35-ACRE CASE | 80 | 51 | 41 | 41 | 0 | 0 | 40 | 0 | 40 | 41 |
| WV C | | | | | | | | | | |
| BASE CASE - 10% ROI | 23,230 | 22,290 | 22,580 | 21,868 | 22,748 | 28,961 | 18,704 | 16,971 | 7,305 | 8,548 |
| BASE CASE - 15% ROI | 23,230 | 22,290 | 22,726 | 21,868 | 21,088 | 27,432 | 16,575 | 12,646 | 11,090 | 15,559 |
| 250-ACRE CASE | 23,230 | 23,585 | 23,035 | 20,478 | 16,634 | 23,282 | 27,092 | 13,313 | 11,903 | 8,232 |
| 150-ACRE CASE | 23,230 | 23,585 | 23,035 | 21,273 | 16,584 | 23,282 | 27,093 | 13,651 | 11,450 | 7,876 |
| 75-ACRE CASE | 23,230 | 21,369 | 17,753 | 16,854 | 16,223 | 22,461 | 26,814 | 15,742 | 10,375 | 7,185 |
| 35-ACRE CASE | 23,230 | 15,196 | 15,177 | 14,943 | 14,243 | 17,675 | 5,666 | 4,219 | 4,045 | 3,522 |
| WV E | | | | | | | | | | |
| BASE CASE - 10% ROI | 630 | 391 | 401 | 411 | 350 | 431 | 442 | 453 | 664 | 677 |
| BASE CASE - 15% ROI | 630 | 391 | 401 | 411 | 422 | 432 | 442 | 453 | 664 | 677 |
| 250-ACRE CASE | 630 | 596 | 401 | 411 | 422 | 432 | 442 | 453 | 664 | 677 |
| 150-ACRE CASE | 630 | 596 | 401 | 411 | 422 | 432 | 442 | 453 | 604 | 676 |
| 75-ACRE CASE | 630 | 596 | 545 | 411 | 422 | 432 | 442 | 453 | 664 | 677 |
| 35-ACRE CASE | 630 | 596 | 607 | 555 | 415 | 415 | 415 | 415 | 555 | 495 |

Table A-2 (cont.)

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WV N | | | | | | | | | | |
| BASE CASE - 10% ROI | 1,480 | 1,175 | 517 | 144 | 72 | 133 | 275 | 216 | 377 | 470 |
| BASE CASE - 15% ROI | 1,480 | 1,175 | 517 | 144 | 72 | 254 | 277 | 216 | 448 | 471 |
| 250-ACRE CASE | 1,480 | 1,293 | 296 | 215 | 134 | 134 | 275 | 215 | 235 | 466 |
| 150-ACRE CASE | 1,480 | 1,193 | 296 | 286 | 134 | 134 | 275 | 215 | 215 | 465 |
| 75-ACRE CASE | 1,480 | 833 | 298 | 308 | 93 | 274 | 134 | 214 | 277 | 468 |
| 35-ACRE CASE | 1,480 | 483 | 318 | 308 | 256 | 276 | 277 | 256 | 215 | 466 |
| WV S | | | | | | | | | | |
| BASE CASE - 10% ROI | 1,210 | 1,223 | 1,078 | 328 | 339 | 349 | 359 | 370 | 380 | 390 |
| BASE CASE - 15% ROI | 1,210 | 1,223 | 1,078 | 328 | 339 | 349 | 359 | 370 | 380 | 390 |
| 250-ACRE CASE | 1,210 | 1,048 | 191 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| 150-ACRE CASE | 1,210 | 1,118 | 231 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| 75-ACRE CASE | 1,210 | 1,048 | 338 | 328 | 339 | 349 | 359 | 370 | 380 | 390 |
| 35-ACRE CASE | 1,210 | 308 | 318 | 328 | 339 | 349 | 359 | 370 | 380 | 390 |
| WV SW | | | | | | | | | | |
| BASE CASE - 10% ROI | 27,730 | 30,668 | 27,159 | 29,650 | 32,438 | 17,345 | 12,020 | 23,483 | 24,205 | 20,778 |
| BASE CASE - 15% ROI | 27,730 | 30,668 | 27,159 | 29,650 | 32,787 | 17,362 | 12,031 | 17,377 | 17,141 | 15,495 |
| 250-ACRE CASE | 27,730 | 26,780 | 24,962 | 24,608 | 23,805 | 21,123 | 6,377 | 9,971 | 10,121 | 10,806 |
| 150-ACRE CASE | 27,730 | 26,770 | 24,852 | 20,372 | 23,145 | 16,903 | 6,372 | 9,161 | 9,046 | 8,883 |
| 75-ACRE CASE | 27,730 | 22,392 | 18,259 | 16,047 | 20,425 | 6,085 | 9,631 | 8,604 | 7,259 | 5,092 |
| 35-ACRE CASE | 27,730 | 13,177 | 10,665 | 4,472 | 1,859 | 2,067 | 4,241 | 3,648 | 2,784 | 1,944 |
| All WV | | | | | | | | | | |
| BASE CASE - 10% ROI | 54,280 | 55,747 | 51,736 | 52,401 | 55,947 | 47,218 | 31,801 | 41,492 | 32,931 | 30,863 |
| BASE CASE - 15% ROI | 54,280 | 55,747 | 51,882 | 52,401 | 54,708 | 45,828 | 29,684 | 31,061 | 29,723 | 32,592 |
| 250-ACRE CASE | 54,280 | 53,303 | 48,885 | 45,734 | 41,015 | 44,992 | 34,207 | 23,971 | 22,944 | 20,201 |
| 150-ACRE CASE | 54,280 | 53,263 | 48,815 | 42,362 | 40,305 | 40,772 | 34,202 | 23,500 | 21,335 | 17,921 |
| 75-ACRE CASE | 54,280 | 46,239 | 37,193 | 33,949 | 37,501 | 29,601 | 37,380 | 25,381 | 18,954 | 13,812 |
| 35-ACRE CASE | 54,280 | 29,761 | 27,086 | 20,606 | 17,112 | 20,782 | 10,958 | 8,908 | 7,979 | 6,816 |
| All E. KY | | | | | | | | | | |
| BASE CASE - 10% ROI | 37,980 | 39,110 | 35,770 | 29,193 | 25,669 | 25,362 | 26,512 | 24,765 | 23,457 | 20,456 |
| BASE CASE - 15% ROI | 37,980 | 39,110 | 35,770 | 29,193 | 27,952 | 26,578 | 26,025 | 25,815 | 22,563 | 19,765 |
| 250-ACRE CASE | 37,980 | 33,752 | 33,220 | 28,371 | 26,421 | 23,478 | 21,127 | 18,251 | 16,314 | 15,325 |
| 150-ACRE CASE | 37,980 | 33,742 | 33,160 | 29,080 | 25,883 | 23,074 | 20,570 | 18,123 | 16,097 | 15,284 |
| 75-ACRE CASE | 37,980 | 32,474 | 30,645 | 26,746 | 20,018 | 17,667 | 15,560 | 14,606 | 13,809 | 12,311 |
| 35-ACRE CASE | 37,980 | 27,702 | 19,847 | 15,415 | 12,257 | 10,662 | 9,954 | 9,089 | 8,215 | 9,101 |
| VA | | | | | | | | | | |
| BASE CASE - 10% ROI | 8,330 | 7,737 | 7,855 | 7,412 | 7,287 | 7,101 | 7,551 | 5,947 | 7,039 | 7,446 |
| BASE CASE - 15% ROI | 8,330 | 7,737 | 7,855 | 7,412 | 7,390 | 7,616 | 7,642 | 6,562 | 7,649 | 7,185 |
| 250-ACRE CASE | 8,330 | 8,043 | 7,851 | 7,964 | 7,488 | 7,451 | 7,375 | 6,436 | 6,912 | 6,856 |
| 150-ACRE CASE | 8,330 | 8,043 | 7,851 | 7,954 | 7,406 | 7,160 | 7,122 | 6,396 | 6,729 | 6,670 |
| 75-ACRE CASE | 8,330 | 8,341 | 8,150 | 7,731 | 6,453 | 7,109 | 6,424 | 6,201 | 5,410 | 4,753 |
| 35-ACRE CASE | 8,330 | 8,007 | 7,333 | 6,421 | 5,246 | 4,391 | 4,166 | 3,472 | 3,381 | 3,285 |
| All Regions | | | | | | | | | | |
| BASE CASE - 10% ROI | 100,590 | 102,594 | 95,362 | 89,006 | 88,903 | 79,681 | 65,864 | 72,204 | 63,427 | 58,765 |
| BASE CASE - 15% ROI | 100,590 | 102,594 | 95,507 | 89,006 | 90,050 | 80,022 | 63,350 | 63,438 | 59,935 | 59,542 |
| 250-ACRE CASE | 100,590 | 95,098 | 89,956 | 82,068 | 74,924 | 75,920 | 62,709 | 48,658 | 46,170 | 42,382 |
| 150-ACRE CASE | 100,590 | 95,048 | 89,826 | 79,395 | 73,594 | 71,005 | 61,894 | 48,019 | 44,161 | 39,875 |
| 75-ACRE CASE | 100,590 | 87,054 | 75,988 | 68,426 | 63,972 | 54,377 | 59,364 | 46,188 | 38,173 | 30,876 |
| 35-ACRE CASE | 100,590 | 65,470 | 54,266 | 42,442 | 34,615 | 35,835 | 25,078 | 21,469 | 19,576 | 19,202 |

Table A-3

**Total Tons - Deep Mines Only
ProductionTons (000)**

| Region | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| KY 1 | | | | | | | | | | |
| BASE CASE - 10% ROI | 20,440 | 18,071 | 18,565 | 18,425 | 17,848 | 19,755 | 20,159 | 26,774 | 22,032 | 19,342 |
| BASE CASE - 15% ROI | 20,440 | 18,071 | 18,565 | 18,425 | 17,344 | 18,349 | 20,027 | 22,965 | 20,720 | 17,252 |
| 250-ACRE CASE | 20,440 | 19,258 | 19,251 | 18,729 | 18,507 | 17,656 | 17,527 | 20,037 | 22,765 | 18,637 |
| 150-ACRE CASE | 20,440 | 19,310 | 19,251 | 18,729 | 18,507 | 17,574 | 17,405 | 19,908 | 22,505 | 18,793 |
| 75-ACRE CASE | 20,440 | 19,345 | 19,516 | 18,731 | 19,811 | 18,670 | 19,639 | 19,813 | 22,292 | 19,300 |
| 35-ACRE CASE | 20,440 | 20,022 | 19,887 | 19,237 | 20,328 | 21,154 | 19,506 | 23,654 | 26,042 | 21,345 |
| KY 2 | | | | | | | | | | |
| BASE CASE - 10% ROI | 29,630 | 27,714 | 29,405 | 32,626 | 28,974 | 20,603 | 23,511 | 24,552 | 16,835 | 13,172 |
| BASE CASE - 15% ROI | 29,630 | 27,714 | 29,255 | 32,617 | 27,973 | 20,940 | 23,497 | 22,741 | 16,604 | 17,486 |
| 250-ACRE CASE | 29,630 | 27,119 | 27,703 | 29,602 | 31,123 | 24,415 | 21,613 | 24,646 | 19,841 | 16,229 |
| 150-ACRE CASE | 29,630 | 27,119 | 27,703 | 29,807 | 31,191 | 24,416 | 21,803 | 23,727 | 18,324 | 15,783 |
| 75-ACRE CASE | 29,630 | 27,170 | 28,544 | 30,485 | 32,960 | 27,200 | 24,030 | 22,429 | 16,249 | 18,208 |
| 35-ACRE CASE | 29,630 | 27,991 | 29,263 | 33,231 | 35,542 | 29,339 | 26,704 | 23,626 | 17,070 | 14,385 |
| KY 3 | | | | | | | | | | |
| BASE CASE - 10% ROI | 670 | 756 | 762 | 773 | 783 | 793 | 818 | 634 | 765 | 768 |
| BASE CASE - 15% ROI | 670 | 756 | 762 | 773 | 783 | 813 | 819 | 788 | 768 | 768 |
| 250-ACRE CASE | 670 | 757 | 763 | 753 | 784 | 794 | 798 | 798 | 798 | 798 |
| 150-ACRE CASE | 670 | 757 | 763 | 753 | 763 | 794 | 798 | 798 | 798 | 798 |
| 75-ACRE CASE | 670 | 757 | 773 | 784 | 773 | 803 | 788 | 808 | 808 | 778 |
| 35-ACRE CASE | 670 | 757 | 773 | 794 | 803 | 813 | 818 | 818 | 768 | 768 |
| KY 4 | | | | | | | | | | |
| BASE CASE - 10% ROI | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WV C | | | | | | | | | | |
| BASE CASE - 10% ROI | 8,230 | 7,372 | 7,721 | 8,210 | 5,744 | 4,848 | 4,509 | 6,128 | 5,184 | 5,128 |
| BASE CASE - 15% ROI | 8,230 | 7,372 | 7,721 | 8,150 | 5,684 | 5,015 | 4,980 | 3,726 | 2,779 | 2,704 |
| 250-ACRE CASE | 8,230 | 7,176 | 7,484 | 7,516 | 7,362 | 4,741 | 4,990 | 3,670 | 3,130 | 2,934 |
| 150-ACRE CASE | 8,230 | 7,176 | 7,484 | 7,999 | 7,362 | 4,741 | 5,000 | 4,054 | 3,028 | 2,955 |
| 75-ACRE CASE | 8,230 | 7,176 | 7,547 | 8,051 | 7,362 | 5,286 | 4,993 | 4,104 | 3,475 | 2,945 |
| 35-ACRE CASE | 8,230 | 7,178 | 7,547 | 8,051 | 7,967 | 5,357 | 5,148 | 6,873 | 4,792 | 4,974 |
| WV E | | | | | | | | | | |
| BASE CASE - 10% ROI | 260 | 267 | 278 | 288 | 298 | 308 | 319 | 329 | 339 | 349 |
| BASE CASE - 15% ROI | 260 | 267 | 278 | 288 | 298 | 308 | 319 | 329 | 339 | 349 |
| 250-ACRE CASE | 260 | 267 | 278 | 288 | 298 | 308 | 319 | 329 | 339 | 349 |
| 150-ACRE CASE | 260 | 267 | 278 | 288 | 298 | 308 | 319 | 329 | 339 | 349 |
| 75-ACRE CASE | 260 | 267 | 278 | 288 | 298 | 308 | 319 | 329 | 339 | 349 |
| 35-ACRE CASE | 260 | 267 | 278 | 288 | 298 | 308 | 319 | 329 | 340 | 349 |

Table A-3 (cont.)

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WV N | | | | | | | | | | |
| BASE CASE - 10% ROI | 33,600 | 37,844 | 42,114 | 44,496 | 46,693 | 47,987 | 46,869 | 46,114 | 41,053 | 42,423 |
| BASE CASE - 15% ROI | 33,600 | 37,844 | 42,114 | 44,496 | 46,693 | 47,987 | 46,869 | 44,370 | 40,451 | 40,983 |
| 250-ACRE CASE | 33,600 | 34,474 | 38,647 | 42,936 | 45,345 | 46,987 | 46,567 | 42,801 | 42,281 | 40,914 |
| 150-ACRE CASE | 33,600 | 34,474 | 38,647 | 42,936 | 45,345 | 46,987 | 46,567 | 42,801 | 42,281 | 40,914 |
| 75-ACRE CASE | 33,600 | 34,474 | 38,647 | 42,936 | 47,325 | 49,022 | 48,984 | 44,352 | 43,574 | 42,475 |
| 35-ACRE CASE | 33,600 | 34,474 | 38,647 | 42,936 | 47,325 | 49,822 | 49,822 | 46,919 | 44,810 | 39,001 |
| WV S | | | | | | | | | | |
| BASE CASE - 10% ROI | 4,540 | 4,189 | 3,353 | 1,521 | 1,138 | 768 | 768 | 694 | 164 | 164 |
| BASE CASE - 15% ROI | 4,540 | 4,189 | 3,353 | 1,521 | 1,138 | 768 | 768 | 694 | 164 | 164 |
| 250-ACRE CASE | 4,540 | 4,189 | 3,020 | 1,139 | 818 | 768 | 768 | 664 | 164 | 164 |
| 150-ACRE CASE | 4,540 | 4,189 | 3,020 | 1,139 | 818 | 768 | 768 | 344 | 164 | 164 |
| 75-ACRE CASE | 4,540 | 4,189 | 3,365 | 1,553 | 1,191 | 841 | 862 | 883 | 903 | 924 |
| 35-ACRE CASE | 4,540 | 4,191 | 3,099 | 905 | 214 | 164 | 170 | 170 | 170 | 170 |
| WV SW | | | | | | | | | | |
| BASE CASE - 10% ROI | 33,460 | 31,711 | 28,221 | 29,293 | 33,698 | 36,219 | 38,532 | 46,281 | 41,681 | 36,705 |
| BASE CASE - 15% ROI | 33,460 | 31,711 | 28,221 | 29,273 | 33,894 | 32,961 | 34,864 | 38,644 | 33,589 | 31,274 |
| 250-ACRE CASE | 33,460 | 32,020 | 28,364 | 27,026 | 27,857 | 33,181 | 31,683 | 32,558 | 32,232 | 36,046 |
| 150-ACRE CASE | 33,460 | 32,020 | 28,364 | 27,026 | 27,907 | 33,182 | 34,872 | 35,492 | 35,206 | 36,668 |
| 75-ACRE CASE | 33,460 | 32,625 | 28,995 | 27,674 | 30,671 | 34,423 | 43,068 | 31,225 | 34,179 | 35,922 |
| 35-ACRE CASE | 33,460 | 32,713 | 29,418 | 28,525 | 31,804 | 38,418 | 41,365 | 41,452 | 42,409 | 42,209 |
| All WV | | | | | | | | | | |
| BASE CASE - 10% ROI | 80,090 | 81,384 | 81,687 | 83,807 | 87,571 | 90,131 | 90,997 | 99,546 | 88,421 | 84,770 |
| BASE CASE - 15% ROI | 80,090 | 81,384 | 81,687 | 83,727 | 87,707 | 87,040 | 87,800 | 87,763 | 77,321 | 75,474 |
| 250-ACRE CASE | 80,090 | 78,127 | 77,793 | 78,905 | 81,680 | 85,985 | 84,327 | 80,022 | 78,147 | 80,407 |
| 150-ACRE CASE | 80,090 | 78,127 | 77,793 | 79,387 | 81,730 | 85,987 | 87,526 | 83,020 | 81,018 | 81,050 |
| 75-ACRE CASE | 80,090 | 78,732 | 78,831 | 80,502 | 86,847 | 89,881 | 98,226 | 80,893 | 82,470 | 82,614 |
| 35-ACRE CASE | 80,090 | 78,825 | 78,988 | 80,704 | 87,608 | 94,070 | 96,824 | 95,743 | 92,520 | 86,703 |
| All E. KY | | | | | | | | | | |
| BASE CASE - 10% ROI | 50,750 | 46,541 | 48,733 | 51,823 | 47,604 | 41,151 | 44,488 | 51,960 | 39,633 | 33,283 |
| BASE CASE - 15% ROI | 50,750 | 46,541 | 48,583 | 51,814 | 46,101 | 40,102 | 44,342 | 46,494 | 38,092 | 35,505 |
| 250-ACRE CASE | 50,750 | 47,133 | 47,718 | 49,085 | 50,414 | 42,865 | 39,938 | 45,480 | 43,404 | 35,664 |
| 150-ACRE CASE | 50,750 | 47,185 | 47,718 | 49,290 | 50,462 | 42,783 | 40,006 | 44,432 | 41,626 | 35,374 |
| 75-ACRE CASE | 50,750 | 47,271 | 48,833 | 49,999 | 53,543 | 46,673 | 44,457 | 43,050 | 39,348 | 38,285 |
| 35-ACRE CASE | 50,750 | 48,769 | 49,922 | 53,262 | 56,673 | 51,305 | 47,027 | 48,098 | 43,880 | 36,498 |
| VA | | | | | | | | | | |
| BASE CASE - 10% ROI | 18,870 | 20,295 | 21,922 | 21,213 | 15,599 | 16,165 | 17,112 | 16,265 | 14,022 | 14,808 |
| BASE CASE - 15% ROI | 18,870 | 20,295 | 21,922 | 21,104 | 15,624 | 16,314 | 17,491 | 16,561 | 14,842 | 15,886 |
| 250-ACRE CASE | 18,870 | 18,419 | 19,792 | 22,016 | 19,695 | 15,569 | 17,328 | 17,382 | 15,262 | 15,873 |
| 150-ACRE CASE | 18,870 | 18,419 | 19,792 | 22,078 | 19,985 | 15,867 | 17,646 | 17,376 | 15,232 | 15,446 |
| 75-ACRE CASE | 18,870 | 18,461 | 20,347 | 22,411 | 20,237 | 16,442 | 18,667 | 18,068 | 16,325 | 17,613 |
| 35-ACRE CASE | 18,870 | 18,768 | 20,389 | 22,757 | 20,786 | 17,025 | 19,923 | 20,315 | 17,919 | 18,800 |
| All Regions | | | | | | | | | | |
| BASE CASE - 10% ROI | 149,710 | 148,220 | 152,341 | 156,843 | 150,775 | 147,447 | 152,596 | 167,771 | 142,077 | 132,861 |
| BASE CASE - 15% ROI | 149,710 | 148,220 | 152,191 | 156,645 | 149,431 | 143,455 | 149,633 | 150,819 | 130,256 | 126,865 |
| 250-ACRE CASE | 149,710 | 143,679 | 145,302 | 150,005 | 151,788 | 144,420 | 141,592 | 142,885 | 136,813 | 131,945 |
| 150-ACRE CASE | 149,710 | 143,731 | 145,302 | 150,755 | 152,177 | 144,637 | 145,177 | 144,828 | 137,877 | 131,869 |
| 75-ACRE CASE | 149,710 | 144,464 | 148,012 | 152,912 | 160,627 | 152,996 | 161,349 | 142,011 | 138,143 | 138,512 |
| 35-ACRE CASE | 149,710 | 146,363 | 149,300 | 156,723 | 165,067 | 162,400 | 163,774 | 164,156 | 154,319 | 142,001 |

Table B-1

**Direct Coal Employment - (Number of Employees)
Base Case - 10% ROI**

| <u>Region</u> | <u>Mining Type</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|------------------------|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| KY_1 | Deep | 1819 | 1608 | 1652 | 1640 | 1588 | 1758 | 1794 | 2383 | 1961 | 1716 |
| KY_1 | Surface | 972 | 975 | 942 | 844 | 775 | 780 | 799 | 839 | 694 | 562 |
| KY_1 Total | | 2791 | 2583 | 2595 | 2484 | 2363 | 2538 | 2593 | 3222 | 2655 | 2278 |
| KY_2 | Deep | 2609 | 2467 | 2617 | 2904 | 2579 | 1834 | 2092 | 2185 | 1498 | 1167 |
| KY_2 | Surface | 1102 | 1044 | 941 | 790 | 676 | 669 | 693 | 544 | 629 | 585 |
| KY_2 Total | | 3711 | 3511 | 3558 | 3693 | 3255 | 2503 | 2786 | 2729 | 2127 | 1752 |
| KY_3 | Deep | 60 | 67 | 68 | 69 | 70 | 71 | 73 | 56 | 68 | 68 |
| KY_3 | Surface | 60 | 48 | 38 | 37 | 20 | 3 | 12 | 2 | 18 | 20 |
| KY_3 Total | | 120 | 116 | 106 | 106 | 89 | 74 | 85 | 58 | 87 | 88 |
| KY_4 | Deep | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KY_4 | Surface | 5 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| KY_4 Total | | 6 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| WV_C | Deep | 724 | 656 | 687 | 731 | 511 | 431 | 393 | 543 | 453 | 447 |
| WV_C | Surface | 1322 | 1266 | 1284 | 1244 | 1314 | 1686 | 1091 | 990 | 420 | 493 |
| WV_C Total | | 2046 | 1922 | 1971 | 1974 | 1825 | 2118 | 1484 | 1533 | 872 | 940 |
| WV_E | Deep | 23 | 24 | 25 | 26 | 27 | 27 | 28 | 29 | 30 | 31 |
| WV_E | Surface | 31 | 17 | 17 | 18 | 14 | 19 | 19 | 20 | 32 | 32 |
| WV_E Total | | 55 | 41 | 42 | 44 | 41 | 46 | 47 | 49 | 62 | 63 |
| WV_N | Deep | 2410 | 2701 | 2996 | 3162 | 3311 | 3405 | 3346 | 3328 | 2975 | 3069 |
| WV_N | Surface | 69 | 51 | 24 | 8 | 4 | 8 | 16 | 13 | 22 | 28 |
| WV_N Total | | 2479 | 2752 | 3020 | 3169 | 3316 | 3413 | 3362 | 3341 | 2997 | 3097 |
| WV_S | Deep | 404 | 373 | 298 | 135 | 101 | 68 | 68 | 62 | 15 | 15 |
| WV_S | Surface | 71 | 72 | 64 | 19 | 20 | 21 | 21 | 22 | 22 | 23 |
| WV_S Total | | 475 | 445 | 362 | 155 | 121 | 89 | 90 | 84 | 37 | 38 |
| WV_SW | Deep | 2732 | 2612 | 2374 | 2449 | 2805 | 3045 | 3339 | 4059 | 3709 | 3253 |
| WV_SW | Surface | 1405 | 1497 | 1404 | 1567 | 1758 | 954 | 669 | 1231 | 1273 | 1127 |
| WV_SW Total | | 4137 | 4109 | 3778 | 4017 | 4563 | 3999 | 4008 | 5291 | 4983 | 4380 |
| ALLEKY | Deep | 4489 | 4142 | 4337 | 4612 | 4237 | 3662 | 3959 | 4624 | 3527 | 2951 |
| ALLEKY | Surface | 2139 | 2075 | 1925 | 1671 | 1470 | 1452 | 1504 | 1385 | 1341 | 1169 |
| ALL E. KY Total | | 6627 | 6217 | 6262 | 6283 | 5707 | 5114 | 5463 | 6009 | 4869 | 4120 |
| ALLWV | Deep | 6293 | 6366 | 6380 | 6503 | 6756 | 6977 | 7175 | 8022 | 7182 | 6815 |
| ALLWV | Surface | 2899 | 2903 | 2793 | 2856 | 3110 | 2688 | 1817 | 2275 | 1769 | 1703 |
| ALLWV Total | | 9192 | 9269 | 9173 | 9359 | 9866 | 9665 | 8991 | 10297 | 8951 | 8518 |
| ALLVA | Deep | 1538 | 1658 | 1795 | 1728 | 1225 | 1271 | 1351 | 1267 | 1063 | 1102 |
| ALLVA | Surface | 488 | 455 | 463 | 437 | 430 | 419 | 446 | 351 | 415 | 439 |
| VA Total | | 2026 | 2113 | 2259 | 2166 | 1654 | 1690 | 1796 | 1618 | 1478 | 1541 |
| ALLREG | Deep | 12319 | 12166 | 12513 | 12843 | 12217 | 11910 | 12485 | 13914 | 11772 | 10868 |
| ALLREG | Surface | 5526 | 5434 | 5181 | 4965 | 5010 | 4559 | 3766 | 4011 | 3526 | 3311 |
| ALLREG Total | | 17845 | 17600 | 17694 | 17808 | 17227 | 16469 | 16251 | 17925 | 15298 | 14179 |

Table B-2

**Direct Coal Employment - (Number of Employees)
Base Case - 15% ROI**

| <u>Region</u> | <u>Mining Type</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|------------------------|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| KY_1 | Deep | 1819 | 1608 | 1652 | 1640 | 1544 | 1633 | 1782 | 2044 | 1844 | 1535 |
| KY_1 | Surface | 972 | 975 | 942 | 844 | 819 | 794 | 799 | 731 | 632 | 526 |
| KY_1 Total | | 2791 | 2583 | 2595 | 2484 | 2363 | 2427 | 2582 | 2775 | 2476 | 2061 |
| KY_2 | Deep | 2609 | 2467 | 2604 | 2903 | 2490 | 1864 | 2091 | 2024 | 1478 | 1556 |
| KY_2 | Surface | 1102 | 1044 | 941 | 790 | 767 | 716 | 664 | 704 | 634 | 580 |
| KY_2 Total | | 3711 | 3511 | 3545 | 3693 | 3256 | 2580 | 2755 | 2728 | 2112 | 2136 |
| KY_3 | Deep | 60 | 67 | 68 | 69 | 70 | 72 | 73 | 70 | 68 | 68 |
| KY_3 | Surface | 60 | 48 | 38 | 37 | 20 | 13 | 12 | 12 | 20 | 20 |
| KY_3 Total | | 120 | 116 | 106 | 106 | 89 | 85 | 85 | 82 | 88 | 88 |
| KY_4 | Deep | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KY_4 | Surface | 5 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| KY_4 Total | | 6 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| WV_C | Deep | 724 | 656 | 687 | 725 | 506 | 438 | 434 | 329 | 238 | 231 |
| WV_C | Surface | 1322 | 1266 | 1292 | 1244 | 1216 | 1596 | 966 | 735 | 643 | 907 |
| WV_C Total | | 2046 | 1922 | 1980 | 1969 | 1722 | 2034 | 1400 | 1063 | 881 | 1138 |
| WV_E | Deep | 23 | 24 | 25 | 26 | 27 | 27 | 28 | 29 | 30 | 31 |
| WV_E | Surface | 31 | 17 | 17 | 18 | 18 | 19 | 19 | 20 | 32 | 32 |
| WV_E Total | | 55 | 41 | 42 | 44 | 45 | 46 | 47 | 49 | 62 | 63 |
| WV_N | Deep | 2410 | 2701 | 2996 | 3162 | 3311 | 3405 | 3346 | 3191 | 2903 | 2941 |
| WV_N | Surface | 69 | 51 | 24 | 8 | 4 | 15 | 16 | 13 | 26 | 28 |
| WV_N Total | | 2479 | 2752 | 3020 | 3169 | 3316 | 3420 | 3362 | 3204 | 2930 | 2968 |
| WV_S | Deep | 404 | 373 | 298 | 135 | 101 | 68 | 68 | 62 | 15 | 15 |
| WV_S | Surface | 71 | 72 | 64 | 19 | 20 | 21 | 21 | 22 | 22 | 23 |
| WV_S Total | | 475 | 445 | 362 | 155 | 121 | 89 | 90 | 84 | 37 | 38 |
| WV_SW | Deep | 2732 | 2612 | 2374 | 2448 | 2823 | 2755 | 3013 | 3379 | 2982 | 2776 |
| WV_SW | Surface | 1405 | 1497 | 1404 | 1567 | 1779 | 955 | 669 | 908 | 894 | 848 |
| WV_SW Total | | 4137 | 4109 | 3778 | 4015 | 4601 | 3710 | 3682 | 4288 | 3877 | 3624 |
| ALLEKY | Deep | 4489 | 4142 | 4324 | 4611 | 4103 | 3569 | 3946 | 4138 | 3390 | 3160 |
| ALLEKY | Surface | 2139 | 2075 | 1925 | 1671 | 1605 | 1524 | 1475 | 1447 | 1288 | 1128 |
| ALL E. KY Total | | 6627 | 6217 | 6249 | 6283 | 5708 | 5093 | 5422 | 5585 | 4679 | 4288 |
| ALLWV | Deep | 6293 | 6366 | 6380 | 6495 | 6768 | 6693 | 6890 | 6990 | 6169 | 5994 |
| ALLWV | Surface | 2899 | 2903 | 2802 | 2856 | 3037 | 2606 | 1692 | 1697 | 1618 | 1838 |
| ALLWV Total | | 9192 | 9269 | 9182 | 9352 | 9805 | 9299 | 8582 | 8687 | 7787 | 7832 |
| ALLVA | Deep | 1538 | 1658 | 1795 | 1719 | 1227 | 1284 | 1384 | 1294 | 1136 | 1224 |
| ALLVA | Surface | 488 | 455 | 463 | 437 | 436 | 449 | 451 | 387 | 451 | 424 |
| ALLVA Total | | 2026 | 2113 | 2259 | 2156 | 1663 | 1733 | 1835 | 1681 | 1587 | 1648 |
| ALLREG | Deep | 12319 | 12166 | 12499 | 12825 | 12098 | 11547 | 12221 | 12422 | 10695 | 10378 |
| ALLREG | Surface | 5526 | 5434 | 5190 | 4965 | 5078 | 4579 | 3618 | 3531 | 3358 | 3390 |
| ALLREG Total | | 17845 | 17600 | 17689 | 17790 | 17176 | 16125 | 15838 | 15952 | 14052 | 13767 |

Table B-3

**Direct Coal Employment - (Number of Employees)
250-Acre Case**

| <u>Region</u> | <u>Mining Ty</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|------------------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| KY_1 | Deep | 1819 | 1714 | 1713 | 1667 | 1647 | 1571 | 1560 | 1783 | 2026 | 1659 |
| KY_1 | Surface | 972 | 944 | 895 | 840 | 779 | 770 | 667 | 558 | 482 | 433 |
| KY_1 Total | | 2791 | 2657 | 2608 | 2507 | 2427 | 2341 | 2227 | 2342 | 2508 | 2092 |
| KY_2 | Deep | 2609 | 2414 | 2466 | 2635 | 2770 | 2173 | 1924 | 2193 | 1766 | 1444 |
| KY_2 | Surface | 1102 | 887 | 829 | 747 | 743 | 603 | 556 | 495 | 452 | 449 |
| KY_2 Total | | 3711 | 3300 | 3295 | 3382 | 3513 | 2776 | 2480 | 2689 | 2218 | 1893 |
| KY_3 | Deep | 60 | 67 | 68 | 67 | 70 | 71 | 71 | 71 | 71 | 71 |
| KY_3 | Surface | 60 | 56 | 47 | 36 | 18 | 2 | 12 | 12 | 20 | 20 |
| KY_3 Total | | 120 | 124 | 114 | 103 | 87 | 72 | 83 | 83 | 91 | 91 |
| KY_4 | Deep | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KY_4 | Surface | 5 | 5 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| KY_4 Total | | 6 | 5 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| WV_C | Deep | 724 | 630 | 658 | 669 | 655 | 422 | 435 | 324 | 275 | 251 |
| WV_C | Surface | 1322 | 1343 | 1311 | 1175 | 965 | 1358 | 1589 | 785 | 702 | 485 |
| WV_C Total | | 2046 | 1973 | 1969 | 1844 | 1621 | 1780 | 2024 | 1108 | 977 | 736 |
| WV_E | Deep | 23 | 24 | 25 | 26 | 27 | 27 | 28 | 29 | 30 | 31 |
| WV_E | Surface | 31 | 29 | 17 | 18 | 18 | 19 | 19 | 20 | 32 | 32 |
| WV_E Total | | 55 | 53 | 42 | 44 | 45 | 46 | 47 | 49 | 62 | 63 |
| WV_N | Deep | 2410 | 2471 | 2759 | 3054 | 3222 | 3337 | 3310 | 3069 | 3019 | 2921 |
| WV_N | Surface | 69 | 59 | 16 | 11 | 8 | 8 | 16 | 13 | 14 | 27 |
| WV_N Total | | 2479 | 2530 | 2775 | 3065 | 3230 | 3345 | 3326 | 3081 | 3033 | 2949 |
| WV_S | Deep | 404 | 373 | 269 | 101 | 73 | 68 | 68 | 59 | 15 | 15 |
| WV_S | Surface | 71 | 62 | 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| WV_S Total | | 475 | 435 | 280 | 103 | 74 | 70 | 70 | 60 | 16 | 16 |
| WV_SW | Deep | 2732 | 2633 | 2381 | 2261 | 2321 | 2764 | 2682 | 2836 | 2865 | 3202 |
| WV_SW | Surface | 1405 | 1347 | 1265 | 1277 | 1282 | 1138 | 342 | 534 | 543 | 596 |
| WV_SW Total | | 4137 | 3980 | 3646 | 3537 | 3603 | 3902 | 3023 | 3370 | 3408 | 3798 |
| ALLEKY | Deep | 4489 | 4195 | 4247 | 4369 | 4487 | 3815 | 3554 | 4048 | 3863 | 3174 |
| ALLEKY | Surface | 2139 | 1891 | 1776 | 1623 | 1540 | 1374 | 1235 | 1066 | 956 | 904 |
| ALL E. KY Total | | 6627 | 6086 | 6023 | 5991 | 6027 | 5189 | 4790 | 5114 | 4819 | 4078 |
| ALLWV | Deep | 6293 | 6130 | 6091 | 6111 | 6297 | 6620 | 6523 | 6317 | 6203 | 6421 |
| ALLWV | Surface | 2899 | 2840 | 2621 | 2481 | 2275 | 2524 | 1968 | 1352 | 1292 | 1142 |
| ALLWV Total | | 9192 | 8970 | 8712 | 8592 | 8572 | 9144 | 8491 | 7669 | 7495 | 7563 |
| ALLVA | Deep | 1538 | 1491 | 1606 | 1796 | 1586 | 1214 | 1366 | 1363 | 1169 | 1219 |
| ALLVA | Surface | 488 | 473 | 463 | 470 | 442 | 440 | 435 | 380 | 408 | 404 |
| ALLVA Total | | 2026 | 1964 | 2069 | 2266 | 2027 | 1654 | 1801 | 1743 | 1577 | 1623 |
| ALLREG | Deep | 12319 | 11816 | 11944 | 12276 | 12370 | 11649 | 11444 | 11727 | 11236 | 10813 |
| ALLREG | Surface | 5526 | 5205 | 4861 | 4574 | 4257 | 4338 | 3638 | 2798 | 2656 | 2451 |
| ALLREG Total | | 17845 | 17021 | 16804 | 16849 | 16627 | 15986 | 15082 | 14525 | 13891 | 13264 |

Table B-4

**Direct Coal Employment - (Number of Employees)
150-Acre Case**

| <u>Region</u> | <u>Mining Type</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|------------------------|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| KY_1 | Deep | 1819 | 1719 | 1713 | 1667 | 1647 | 1564 | 1549 | 1772 | 2003 | 1673 |
| KY_1 | Surface | 972 | 943 | 895 | 839 | 773 | 767 | 661 | 555 | 480 | 431 |
| KY_1 Total | | 2791 | 2661 | 2608 | 2506 | 2420 | 2332 | 2210 | 2327 | 2482 | 2103 |
| KY_2 | Deep | 2609 | 2414 | 2466 | 2653 | 2776 | 2173 | 1940 | 2112 | 1631 | 1405 |
| KY_2 | Surface | 1102 | 887 | 829 | 782 | 718 | 571 | 529 | 485 | 442 | 445 |
| KY_2 Total | | 3711 | 3300 | 3294 | 3435 | 3494 | 2744 | 2469 | 2596 | 2073 | 1849 |
| KY_3 | Deep | 60 | 67 | 68 | 67 | 68 | 71 | 71 | 71 | 71 | 71 |
| KY_3 | Surface | 60 | 56 | 47 | 46 | 18 | 12 | 12 | 19 | 20 | 24 |
| KY_3 Total | | 120 | 124 | 114 | 113 | 86 | 83 | 83 | 90 | 91 | 95 |
| KY_4 | Deep | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KY_4 | Surface | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| KY_4 Total | | 6 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| WV_C | Deep | 724 | 630 | 658 | 704 | 655 | 422 | 436 | 351 | 268 | 253 |
| WV_C | Surface | 1322 | 1343 | 1311 | 1222 | 963 | 1358 | 1589 | 805 | 675 | 464 |
| WV_C Total | | 2046 | 1973 | 1969 | 1925 | 1619 | 1780 | 2025 | 1156 | 943 | 717 |
| WV_E | Deep | 23 | 24 | 25 | 26 | 27 | 27 | 28 | 29 | 30 | 31 |
| WV_E | Surface | 31 | 29 | 17 | 18 | 18 | 19 | 19 | 20 | 28 | 32 |
| WV_E Total | | 55 | 53 | 42 | 44 | 45 | 46 | 47 | 49 | 58 | 63 |
| WV_N | Deep | 2410 | 2471 | 2759 | 3054 | 3222 | 3337 | 3310 | 3069 | 3019 | 2921 |
| WV_N | Surface | 69 | 55 | 16 | 15 | 8 | 8 | 16 | 13 | 13 | 27 |
| WV_N Total | | 2479 | 2526 | 2775 | 3069 | 3230 | 3345 | 3326 | 3081 | 3031 | 2949 |
| WV_S | Deep | 404 | 373 | 269 | 101 | 73 | 68 | 68 | 31 | 15 | 15 |
| WV_S | Surface | 71 | 66 | 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| WV_S Total | | 475 | 439 | 282 | 103 | 74 | 70 | 70 | 32 | 16 | 16 |
| WV_SW | Deep | 2732 | 2633 | 2381 | 2261 | 2325 | 2764 | 2965 | 3097 | 3133 | 3254 |
| WV_SW | Surface | 1405 | 1347 | 1261 | 1067 | 1248 | 910 | 342 | 491 | 489 | 488 |
| WV_SW Total | | 4137 | 3980 | 3641 | 3327 | 3573 | 3675 | 3307 | 3588 | 3622 | 3741 |
| ALLEKY | Deep | 4489 | 4199 | 4247 | 4387 | 4491 | 3808 | 3561 | 3954 | 3705 | 3148 |
| ALLEKY | Surface | 2139 | 1891 | 1775 | 1667 | 1509 | 1350 | 1203 | 1058 | 944 | 902 |
| ALL E. KY Total | | 6627 | 6090 | 6022 | 6054 | 6000 | 5158 | 4763 | 5013 | 4649 | 4050 |
| ALLWV | Deep | 6293 | 6130 | 6091 | 6145 | 6302 | 6620 | 6808 | 6577 | 6465 | 6473 |
| ALLWV | Surface | 2899 | 2840 | 2619 | 2323 | 2239 | 2296 | 1967 | 1329 | 1206 | 1013 |
| ALLWV Total | | 9192 | 8970 | 8710 | 8468 | 8540 | 8916 | 8775 | 7906 | 7670 | 7486 |
| ALLVA | Deep | 1538 | 1491 | 1606 | 1802 | 1608 | 1237 | 1391 | 1362 | 1166 | 1181 |
| ALLVA | Surface | 488 | 473 | 463 | 469 | 437 | 422 | 420 | 377 | 397 | 394 |
| ALLVA Total | | 2026 | 1964 | 2069 | 2271 | 2045 | 1660 | 1811 | 1739 | 1563 | 1574 |
| ALLREG | Deep | 12319 | 11821 | 11944 | 12334 | 12401 | 11665 | 11759 | 11894 | 11336 | 10802 |
| ALLREG | Surface | 5526 | 5204 | 4857 | 4459 | 4185 | 4069 | 3590 | 2764 | 2547 | 2308 |
| ALLREG Total | | 17845 | 17025 | 16801 | 16793 | 16586 | 15733 | 15349 | 14658 | 13882 | 13110 |

Table B-5

**Direct Coal Employment - (Number of Employees)
75-Acre Case**

| <u>Region</u> | <u>Mining Type</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|------------------------|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| KY_1 | Deep | 1819 | 1722 | 1737 | 1667 | 1763 | 1662 | 1748 | 1763 | 1984 | 1718 |
| KY_1 | Surface | 972 | 881 | 820 | 753 | 583 | 449 | 402 | 360 | 295 | 226 |
| KY_1 Total | | 2791 | 2602 | 2557 | 2420 | 2346 | 2111 | 2150 | 2123 | 2279 | 1944 |
| KY_2 | Deep | 2609 | 2418 | 2540 | 2713 | 2933 | 2421 | 2139 | 1996 | 1446 | 1620 |
| KY_2 | Surface | 1102 | 878 | 816 | 760 | 566 | 575 | 504 | 483 | 498 | 474 |
| KY_2 Total | | 3711 | 3296 | 3357 | 3473 | 3500 | 2996 | 2642 | 2479 | 1944 | 2094 |
| KY_3 | Deep | 60 | 67 | 69 | 70 | 69 | 71 | 70 | 72 | 72 | 69 |
| KY_3 | Surface | 60 | 56 | 53 | 46 | 18 | 12 | 12 | 19 | 20 | 24 |
| KY_3 Total | | 120 | 124 | 122 | 116 | 87 | 83 | 82 | 91 | 92 | 93 |
| KY_4 | Deep | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KY_4 | Surface | 5 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| KY_4 Total | | 6 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| WV_C | Deep | 724 | 630 | 663 | 707 | 655 | 461 | 437 | 356 | 299 | 252 |
| WV_C | Surface | 1322 | 1223 | 1029 | 977 | 934 | 1299 | 1563 | 918 | 601 | 412 |
| WV_C Total | | 2046 | 1853 | 1692 | 1684 | 1590 | 1760 | 2000 | 1273 | 900 | 664 |
| WV_E | Deep | 23 | 24 | 25 | 26 | 27 | 27 | 28 | 29 | 30 | 31 |
| WV_E | Surface | 31 | 29 | 26 | 18 | 18 | 19 | 19 | 20 | 32 | 32 |
| WV_E Total | | 55 | 53 | 51 | 44 | 45 | 46 | 47 | 49 | 62 | 63 |
| WV_N | Deep | 2410 | 2471 | 2759 | 3054 | 3356 | 3476 | 3476 | 3162 | 3093 | 3012 |
| WV_N | Surface | 69 | 42 | 16 | 16 | 5 | 16 | 8 | 13 | 16 | 28 |
| WV_N Total | | 2479 | 2513 | 2775 | 3071 | 3362 | 3492 | 3484 | 3174 | 3109 | 3040 |
| WV_S | Deep | 404 | 373 | 299 | 138 | 106 | 75 | 77 | 79 | 80 | 82 |
| WV_S | Surface | 71 | 62 | 20 | 19 | 20 | 21 | 21 | 22 | 22 | 23 |
| WV_S Total | | 475 | 435 | 319 | 158 | 126 | 95 | 98 | 100 | 103 | 105 |
| WV_SW | Deep | 2732 | 2681 | 2431 | 2318 | 2578 | 2875 | 3639 | 2779 | 3029 | 3184 |
| WV_SW | Surface | 1405 | 1134 | 936 | 866 | 1098 | 326 | 525 | 465 | 385 | 267 |
| WV_SW Total | | 4137 | 3815 | 3367 | 3183 | 3676 | 3201 | 4165 | 3244 | 3414 | 3451 |
| ALLEKY | Deep | 4489 | 4207 | 4346 | 4450 | 4765 | 4154 | 3957 | 3831 | 3502 | 3407 |
| ALLEKY | Surface | 2139 | 1820 | 1691 | 1559 | 1167 | 1036 | 918 | 862 | 815 | 726 |
| ALL E. KY Total | | 6627 | 6027 | 6038 | 6009 | 5933 | 5190 | 4875 | 4693 | 4317 | 4134 |
| ALLWV | Deep | 6293 | 6179 | 6176 | 6243 | 6722 | 6914 | 7658 | 6404 | 6531 | 6561 |
| ALLWV | Surface | 2899 | 2490 | 2027 | 1896 | 2077 | 1681 | 2137 | 1436 | 1056 | 763 |
| ALLWV Total | | 9192 | 8669 | 8204 | 8139 | 8798 | 8595 | 9795 | 7840 | 7588 | 7324 |
| ALLVA | Deep | 1538 | 1495 | 1655 | 1832 | 1630 | 1288 | 1478 | 1420 | 1260 | 1370 |
| ALLVA | Surface | 488 | 492 | 481 | 456 | 381 | 419 | 379 | 366 | 319 | 280 |
| ALLVA Total | | 2026 | 1987 | 2136 | 2288 | 2011 | 1708 | 1857 | 1786 | 1579 | 1650 |
| ALLREG | Deep | 12319 | 11880 | 12178 | 12525 | 13118 | 12356 | 13093 | 11656 | 11293 | 11338 |
| ALLREG | Surface | 5526 | 4802 | 4200 | 3911 | 3625 | 3136 | 3434 | 2664 | 2190 | 1769 |
| ALLREG Total | | 17845 | 16683 | 16377 | 16436 | 16742 | 15492 | 16527 | 14319 | 13483 | 13108 |

Table B-6

**Direct Coal Employment - (Number of Employees)
35-Acre Case**

| <u>Region</u> | <u>Mining Type</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|------------------------|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| KY_1 | Deep | 1819 | 1782 | 1770 | 1712 | 1809 | 1883 | 1736 | 2105 | 2318 | 1900 |
| KY_1 | Surface | 972 | 751 | 435 | 349 | 241 | 199 | 185 | 147 | 93 | 100 |
| KY_1 Total | | 2791 | 2533 | 2205 | 2061 | 2050 | 2081 | 1921 | 2252 | 2411 | 1999 |
| KY_2 | Deep | 2609 | 2491 | 2604 | 2958 | 3163 | 2611 | 2377 | 2103 | 1519 | 1280 |
| KY_2 | Surface | 1102 | 773 | 668 | 521 | 465 | 413 | 381 | 375 | 381 | 422 |
| KY_2 Total | | 3711 | 3264 | 3273 | 3478 | 3628 | 3024 | 2758 | 2477 | 1900 | 1703 |
| KY_3 | Deep | 60 | 67 | 69 | 71 | 72 | 72 | 73 | 73 | 68 | 68 |
| KY_3 | Surface | 60 | 54 | 53 | 37 | 17 | 17 | 19 | 15 | 8 | 13 |
| KY_3 Total | | 120 | 121 | 122 | 108 | 89 | 90 | 91 | 88 | 77 | 81 |
| KY_4 | Deep | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KY_4 | Surface | 5 | 3 | 2 | 2 | 0 | 0 | 2 | 0 | 2 | 2 |
| KY_4 Total | | 6 | 3 | 2 | 2 | 0 | 0 | 2 | 0 | 2 | 2 |
| WV_C | Deep | 724 | 630 | 663 | 707 | 700 | 467 | 448 | 608 | 423 | 431 |
| WV_C | Surface | 1322 | 889 | 888 | 874 | 828 | 1035 | 332 | 249 | 239 | 208 |
| WV_C Total | | 2046 | 1519 | 1551 | 1582 | 1528 | 1502 | 780 | 857 | 662 | 639 |
| WV_E | Deep | 23 | 24 | 25 | 26 | 27 | 27 | 28 | 29 | 30 | 31 |
| WV_E | Surface | 31 | 29 | 30 | 26 | 18 | 18 | 18 | 18 | 26 | 25 |
| WV_E Total | | 55 | 53 | 54 | 52 | 45 | 45 | 46 | 47 | 56 | 56 |
| WV_N | Deep | 2410 | 2471 | 2759 | 3054 | 3356 | 3530 | 3534 | 3350 | 3188 | 2791 |
| WV_N | Surface | 69 | 28 | 18 | 16 | 15 | 16 | 16 | 15 | 13 | 27 |
| WV_N Total | | 2479 | 2499 | 2776 | 3071 | 3372 | 3547 | 3550 | 3366 | 3201 | 2819 |
| WV_S | Deep | 404 | 373 | 276 | 81 | 19 | 15 | 15 | 15 | 15 | 15 |
| WV_S | Surface | 71 | 18 | 19 | 19 | 20 | 21 | 21 | 22 | 22 | 23 |
| WV_S Total | | 475 | 391 | 295 | 100 | 39 | 35 | 36 | 36 | 37 | 38 |
| WV_SW | Deep | 2732 | 2688 | 2468 | 2385 | 2669 | 3194 | 3521 | 3688 | 3766 | 3743 |
| WV_SW | Surface | 1405 | 713 | 573 | 227 | 99 | 122 | 240 | 186 | 138 | 92 |
| WV_SW Total | | 4137 | 3401 | 3041 | 2612 | 2768 | 3316 | 3761 | 3874 | 3904 | 3836 |
| ALLEKY | Deep | 4489 | 4340 | 4443 | 4740 | 5044 | 4566 | 4185 | 4281 | 3905 | 3248 |
| ALLEKY | Surface | 2139 | 1580 | 1159 | 909 | 723 | 629 | 587 | 536 | 485 | 537 |
| ALL E. KY Total | | 6627 | 5921 | 5602 | 5650 | 5767 | 5195 | 4773 | 4817 | 4390 | 3785 |
| ALLWV | Deep | 6293 | 6186 | 6190 | 6253 | 6771 | 7233 | 7546 | 7690 | 7422 | 7011 |
| ALLWV | Surface | 2899 | 1677 | 1527 | 1164 | 981 | 1211 | 628 | 490 | 438 | 376 |
| ALLWV Total | | 9192 | 7863 | 7717 | 7416 | 7751 | 8445 | 8174 | 8180 | 7860 | 7387 |
| ALLVA | Deep | 1538 | 1522 | 1659 | 1862 | 1679 | 1337 | 1587 | 1613 | 1395 | 1468 |
| ALLVA | Surface | 488 | 472 | 433 | 379 | 309 | 259 | 246 | 205 | 199 | 194 |
| ALLVA Total | | 2026 | 1994 | 2092 | 2241 | 1989 | 1596 | 1832 | 1818 | 1595 | 1662 |
| ALLREG | Deep | 12319 | 12048 | 12292 | 12855 | 13494 | 13136 | 13318 | 13584 | 12723 | 11728 |
| ALLREG | Surface | 5526 | 3730 | 3118 | 2452 | 2013 | 2100 | 1461 | 1231 | 1122 | 1107 |
| ALLREG Total | | 17845 | 15778 | 15410 | 15307 | 15507 | 15236 | 14779 | 14815 | 13844 | 12834 |

Table C-1

Mine Capacity Capital Expenditures
Million Dollars

| Region | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| KY 1 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 33.33 | 13.01 | 0.18 | 11.34 | 17.59 | 1.05 | 178.48 | 0.00 | 0.00 |
| BASE CASE - 15% ROI | 0.00 | 33.33 | 13.01 | 0.18 | 0.17 | 0.43 | 31.01 | 70.50 | 0.00 | 0.00 |
| 250-ACRE CASE | 0.00 | 5.09 | 27.10 | 0.00 | 3.77 | 0.00 | 0.00 | 51.85 | 47.09 | 0.00 |
| 150-ACRE CASE | 0.00 | 4.95 | 27.03 | 0.00 | 3.77 | 0.00 | 0.00 | 51.70 | 49.09 | 0.00 |
| 75-ACRE CASE | 0.00 | 2.72 | 16.12 | 0.00 | 31.42 | 0.00 | 31.30 | 1.63 | 31.66 | 0.00 |
| 35-ACRE CASE | 0.00 | 2.49 | 9.42 | 0.00 | 25.60 | 16.45 | 0.00 | 99.52 | 40.68 | 0.33 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 2 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 67.08 | 45.89 | 68.35 | 0.70 | 0.70 | 39.17 | 79.52 | 0.00 | 0.00 |
| BASE CASE - 15% ROI | 0.00 | 67.08 | 42.89 | 71.18 | 0.70 | 0.70 | 53.53 | 21.67 | 0.00 | 21.12 |
| 250-ACRE CASE | 0.00 | 12.60 | 34.51 | 54.21 | 38.50 | 0.00 | 0.00 | 68.61 | 0.00 | 0.00 |
| 150-ACRE CASE | 0.00 | 12.60 | 34.30 | 54.21 | 39.96 | 0.00 | 0.00 | 31.92 | 0.00 | 0.00 |
| 75-ACRE CASE | 0.00 | 12.30 | 33.19 | 54.52 | 80.17 | 0.00 | 0.00 | 0.00 | 1.08 | 39.18 |
| 35-ACRE CASE | 0.00 | 12.29 | 31.83 | 79.48 | 59.95 | 0.00 | 0.00 | 0.00 | 1.50 | 0.00 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 3 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 0.79 | 0.11 | 0.21 | 0.20 | 0.21 | 0.10 | 0.05 | 0.00 | 0.14 |
| BASE CASE - 15% ROI | 0.00 | 0.79 | 0.11 | 0.21 | 0.20 | 0.21 | 0.10 | 0.00 | 0.00 | 0.04 |
| 250-ACRE CASE | 0.00 | 0.39 | 0.13 | 0.21 | 0.20 | 0.21 | 0.08 | 0.05 | 0.00 | 0.04 |
| 150-ACRE CASE | 0.00 | 0.39 | 0.13 | 0.21 | 0.20 | 0.21 | 0.14 | 0.00 | 0.03 | 0.01 |
| 75-ACRE CASE | 0.00 | 0.39 | 0.33 | 0.21 | 0.19 | 0.20 | 0.14 | 0.00 | 0.03 | 0.01 |
| 35-ACRE CASE | 0.00 | 0.34 | 0.33 | 0.41 | 0.19 | 0.20 | 0.10 | 0.00 | 0.00 | 0.00 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 4 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 0.74 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BASE CASE - 15% ROI | 0.00 | 0.74 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| 250-ACRE CASE | 0.00 | 0.02 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| 150-ACRE CASE | 0.00 | 0.02 | 0.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| 75-ACRE CASE | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| 35-ACRE CASE | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| WV C | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 8.37 | 11.56 | 14.41 | 88.19 | 83.51 | 0.18 | 68.97 | 0.42 | 0.40 |
| BASE CASE - 15% ROI | 0.00 | 8.37 | 11.56 | 13.29 | 65.01 | 70.13 | 0.43 | 0.43 | 0.42 | 62.96 |
| 250-ACRE CASE | 0.00 | 7.17 | 12.15 | 14.47 | 4.65 | 96.36 | 40.28 | 0.27 | 0.26 | 0.49 |
| 150-ACRE CASE | 0.00 | 7.17 | 12.15 | 14.47 | 5.13 | 96.42 | 40.28 | 0.27 | 0.52 | 0.48 |
| 75-ACRE CASE | 0.00 | 6.69 | 12.04 | 10.45 | 12.14 | 70.47 | 66.64 | 0.69 | 0.68 | 0.66 |
| 35-ACRE CASE | 0.00 | 0.66 | 7.55 | 10.27 | 0.97 | 53.47 | 0.52 | 43.08 | 0.52 | 0.48 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| WV E | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 0.42 | 0.38 | 0.38 | 0.38 | 0.38 | 0.40 | 0.38 | 0.38 | 0.40 |
| BASE CASE - 15% ROI | 0.00 | 0.42 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.40 |
| 250-ACRE CASE | 0.00 | 0.42 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.40 |
| 150-ACRE CASE | 0.00 | 0.42 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 75-ACRE CASE | 0.00 | 0.42 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.40 |
| 35-ACRE CASE | 0.00 | 0.42 | 0.38 | 0.38 | 0.27 | 0.20 | 0.21 | 0.21 | 0.21 | 0.22 |

Table C-1 (cont.)

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WV N | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 145.99 | 144.44 | 78.27 | 77.52 | 37.61 | 22.30 | 43.74 | 0.00 | 46.66 |
| BASE CASE - 15% ROI | 0.00 | 145.99 | 144.44 | 78.27 | 77.52 | 37.61 | 22.33 | 14.31 | 0.00 | 16.93 |
| 250-ACRE CASE | 0.00 | 30.85 | 141.15 | 145.22 | 79.27 | 52.32 | 1.60 | 20.54 | 7.07 | 3.92 |
| 150-ACRE CASE | 0.00 | 30.85 | 141.15 | 145.22 | 79.27 | 52.32 | 1.60 | 20.54 | 7.07 | 3.92 |
| 75-ACRE CASE | 0.00 | 30.85 | 141.15 | 145.22 | 148.57 | 54.27 | 9.75 | 0.48 | 9.25 | 5.89 |
| 35-ACRE CASE | 0.00 | 30.85 | 141.15 | 145.22 | 148.57 | 82.27 | 10.32 | 19.76 | 0.00 | 0.03 |
| WV S | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 0.19 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| BASE CASE - 15% ROI | 0.00 | 0.19 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 250-ACRE CASE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 150-ACRE CASE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 75-ACRE CASE | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.55 | 0.55 | 0.55 | 0.55 |
| 35-ACRE CASE | 0.00 | 0.00 | 0.15 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| WV SW | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 55.12 | 12.82 | 102.78 | 219.00 | 61.61 | 126.88 | 416.55 | 1.61 | 1.35 |
| BASE CASE - 15% ROI | 0.00 | 55.12 | 12.82 | 102.38 | 218.00 | 5.09 | 124.58 | 199.99 | 0.41 | 14.99 |
| 250-ACRE CASE | 0.00 | 11.35 | 27.14 | 49.37 | 75.72 | 128.16 | 11.14 | 146.14 | 49.47 | 83.45 |
| 150-ACRE CASE | 0.00 | 11.35 | 26.45 | 13.86 | 105.64 | 128.05 | 81.88 | 123.36 | 54.70 | 14.43 |
| 75-ACRE CASE | 0.00 | 9.84 | 3.65 | 48.59 | 147.83 | 88.42 | 241.63 | 0.32 | 39.85 | 34.75 |
| 35-ACRE CASE | 0.00 | 8.70 | 15.00 | 6.80 | 82.94 | 188.29 | 148.55 | 179.12 | 12.82 | 0.17 |
| All WV | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 210.09 | 169.20 | 195.84 | 385.23 | 183.25 | 149.90 | 529.78 | 2.55 | 48.95 |
| BASE CASE - 15% ROI | 0.00 | 210.09 | 169.20 | 194.32 | 361.05 | 113.35 | 147.86 | 215.25 | 1.35 | 95.42 |
| 250-ACRE CASE | 0.00 | 49.79 | 180.82 | 209.44 | 160.02 | 277.22 | 53.40 | 167.33 | 57.18 | 88.26 |
| 150-ACRE CASE | 0.00 | 49.79 | 180.13 | 173.93 | 190.42 | 277.17 | 124.14 | 144.55 | 62.67 | 19.21 |
| 75-ACRE CASE | 0.00 | 47.80 | 157.22 | 204.64 | 309.06 | 213.68 | 318.95 | 2.42 | 50.71 | 42.25 |
| 35-ACRE CASE | 0.00 | 40.63 | 164.23 | 162.81 | 232.89 | 324.37 | 159.74 | 242.31 | 13.69 | 1.04 |
| All E. KY | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 101.94 | 59.01 | 68.74 | 12.24 | 18.50 | 40.32 | 258.05 | 0.00 | 0.14 |
| BASE CASE - 15% ROI | 0.00 | 101.94 | 56.01 | 71.57 | 1.07 | 1.34 | 84.64 | 92.17 | 0.00 | 21.17 |
| 250-ACRE CASE | 0.00 | 18.10 | 62.19 | 54.42 | 42.47 | 0.21 | 0.08 | 120.51 | 47.09 | 0.05 |
| 150-ACRE CASE | 0.00 | 17.96 | 61.82 | 54.42 | 43.93 | 0.21 | 0.14 | 83.62 | 49.12 | 0.02 |
| 75-ACRE CASE | 0.00 | 15.43 | 49.64 | 54.73 | 111.78 | 0.20 | 31.44 | 1.63 | 32.77 | 39.20 |
| 35-ACRE CASE | 0.00 | 15.14 | 41.58 | 79.89 | 85.74 | 16.65 | 0.10 | 99.53 | 42.18 | 0.34 |
| VA | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 67.73 | 40.88 | 8.33 | 6.82 | 7.06 | 12.51 | 13.15 | 8.05 | 7.90 |
| BASE CASE - 15% ROI | 0.00 | 67.73 | 40.88 | 8.33 | 6.82 | 7.05 | 24.56 | 13.15 | 8.53 | 24.27 |
| 250-ACRE CASE | 0.00 | 19.34 | 44.45 | 53.69 | 6.97 | 7.18 | 30.75 | 13.50 | 8.05 | 9.58 |
| 150-ACRE CASE | 0.00 | 19.34 | 44.45 | 53.55 | 12.57 | 7.33 | 31.31 | 7.90 | 8.02 | 8.26 |
| 75-ACRE CASE | 0.00 | 19.35 | 45.70 | 52.59 | 12.57 | 7.33 | 59.92 | 8.05 | 8.26 | 23.08 |
| 35-ACRE CASE | 0.00 | 16.77 | 43.94 | 53.49 | 12.57 | 12.93 | 63.21 | 14.30 | 8.40 | 14.67 |
| All Regions | | | | | | | | | | |
| BASE CASE - 10% ROI | 0.00 | 379.76 | 269.09 | 272.91 | 404.29 | 208.81 | 202.73 | 800.98 | 10.60 | 56.99 |
| BASE CASE - 15% ROI | 0.00 | 379.76 | 266.09 | 274.22 | 368.94 | 121.74 | 257.06 | 320.57 | 9.88 | 140.86 |
| 250-ACRE CASE | 0.00 | 87.23 | 287.46 | 317.55 | 209.46 | 284.61 | 84.23 | 301.34 | 112.32 | 97.89 |
| 150-ACRE CASE | 0.00 | 87.09 | 286.40 | 281.90 | 246.92 | 284.71 | 155.59 | 236.07 | 119.81 | 27.49 |
| 75-ACRE CASE | 0.00 | 82.58 | 252.56 | 311.96 | 433.41 | 221.21 | 410.31 | 12.10 | 91.74 | 104.53 |
| 35-ACRE CASE | 0.00 | 72.54 | 249.75 | 296.19 | 331.20 | 353.95 | 223.05 | 356.14 | 64.27 | 16.05 |

Table D-1

Average Coal Prices
(Constant 2001 Dollars per Ton, Fob Mine)

| Region | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| KY 1 | | | | | | | | | | |
| BASE CASE - 10% ROI | 35.22 | 25.49 | 25.06 | 24.73 | 23.57 | 23.78 | 25.24 | 22.47 | 23.79 | 25.77 |
| BASE CASE - 15% ROI | 35.22 | 25.49 | 25.05 | 24.74 | 24.02 | 24.76 | 25.27 | 23.68 | 25.53 | 25.11 |
| 250-ACRE CASE | 35.22 | 27.22 | 25.87 | 25.31 | 24.81 | 24.39 | 25.14 | 24.52 | 25.08 | 26.45 |
| 150-ACRE CASE | 35.22 | 27.22 | 25.88 | 25.51 | 24.80 | 24.37 | 25.02 | 24.60 | 24.63 | 26.53 |
| 75-ACRE CASE | 35.22 | 27.63 | 26.70 | 26.14 | 24.38 | 25.64 | 24.29 | 24.74 | 25.89 | 26.54 |
| 35-ACRE CASE | 35.22 | 29.23 | 27.73 | 27.37 | 26.20 | 25.72 | 26.36 | 24.99 | 25.12 | 26.71 |
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| KY 2 | | | | | | | | | | |
| BASE CASE - 10% ROI | 35.02 | 25.27 | 24.70 | 24.13 | 23.02 | 23.54 | 24.77 | 22.30 | 23.81 | 25.50 |
| BASE CASE - 15% ROI | 35.02 | 25.27 | 24.70 | 24.15 | 23.44 | 24.49 | 24.79 | 23.38 | 25.37 | 24.64 |
| 250-ACRE CASE | 35.02 | 27.00 | 25.44 | 24.67 | 24.14 | 23.86 | 24.83 | 24.15 | 24.80 | 26.17 |
| 150-ACRE CASE | 35.02 | 27.00 | 25.44 | 24.83 | 24.13 | 23.87 | 24.68 | 24.30 | 24.58 | 26.24 |
| 75-ACRE CASE | 35.02 | 27.36 | 26.21 | 25.40 | 23.79 | 25.17 | 23.97 | 24.45 | 25.71 | 26.07 |
| 35-ACRE CASE | 35.02 | 28.87 | 27.25 | 26.74 | 25.61 | 25.20 | 25.81 | 24.71 | 25.11 | 26.47 |
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| KY 3 | | | | | | | | | | |
| BASE CASE - 10% ROI | 34.27 | 24.31 | 23.73 | 24.18 | 21.44 | 23.62 | 22.95 | 19.44 | 21.69 | 23.40 |
| BASE CASE - 15% ROI | 34.27 | 24.31 | 24.82 | 22.89 | 21.84 | 22.69 | 23.07 | 23.25 | 23.39 | 22.70 |
| 250-ACRE CASE | 34.27 | 26.19 | 24.65 | 23.49 | 22.73 | 21.85 | 23.05 | 21.62 | 23.07 | 24.00 |
| 150-ACRE CASE | 34.27 | 26.19 | 24.65 | 23.74 | 22.69 | 22.18 | 22.88 | 23.94 | 22.20 | 24.01 |
| 75-ACRE CASE | 34.27 | 26.63 | 25.44 | 25.20 | 22.27 | 24.65 | 22.03 | 23.98 | 23.88 | 23.81 |
| 35-ACRE CASE | 34.27 | 28.39 | 26.47 | 25.53 | 24.12 | 23.54 | 24.07 | 22.23 | 22.00 | 26.08 |
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| KY 4 | | | | | | | | | | |
| BASE CASE - 10% ROI | 34.88 | 25.17 | 24.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 25.57 |
| BASE CASE - 15% ROI | 34.88 | 25.17 | 24.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 25.46 | 24.58 |
| 250-ACRE CASE | 34.88 | 26.85 | 25.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 24.75 | 26.03 |
| 150-ACRE CASE | 34.88 | 26.85 | 25.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 24.53 | 26.17 |
| 75-ACRE CASE | 34.88 | 27.16 | 25.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 25.63 | 26.08 |
| 35-ACRE CASE | 34.88 | 28.54 | 26.85 | 26.07 | 0.00 | 0.00 | 25.35 | 0.00 | 25.19 | 26.50 |
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| WV C | | | | | | | | | | |
| BASE CASE - 10% ROI | 34.75 | 25.38 | 25.10 | 24.56 | 23.58 | 23.51 | 24.78 | 21.23 | 22.59 | 24.54 |
| BASE CASE - 15% ROI | 34.75 | 25.38 | 25.09 | 24.57 | 23.95 | 24.49 | 24.94 | 22.42 | 24.09 | 23.77 |
| 250-ACRE CASE | 34.75 | 26.96 | 25.97 | 25.19 | 24.73 | 24.16 | 24.72 | 23.32 | 23.70 | 25.03 |
| 150-ACRE CASE | 34.75 | 26.96 | 25.97 | 25.46 | 24.70 | 24.13 | 24.63 | 23.44 | 23.20 | 25.04 |
| 75-ACRE CASE | 34.75 | 27.54 | 26.91 | 26.22 | 24.37 | 25.56 | 23.75 | 23.53 | 24.29 | 24.96 |
| 35-ACRE CASE | 34.75 | 29.27 | 27.79 | 27.29 | 25.82 | 25.32 | 25.81 | 23.81 | 23.69 | 25.29 |
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| WV E | | | | | | | | | | |
| BASE CASE - 10% ROI | 35.77 | 26.11 | 24.81 | 23.40 | 22.24 | 22.54 | 23.24 | 22.52 | 24.10 | 25.99 |
| BASE CASE - 15% ROI | 35.77 | 26.11 | 24.81 | 23.40 | 22.48 | 22.97 | 23.17 | 23.06 | 24.97 | 25.72 |
| 250-ACRE CASE | 35.77 | 27.61 | 25.57 | 23.62 | 23.04 | 22.58 | 23.13 | 23.38 | 23.60 | 26.21 |
| 150-ACRE CASE | 35.77 | 27.62 | 25.58 | 23.87 | 23.07 | 22.57 | 23.17 | 23.48 | 23.29 | 25.87 |
| 75-ACRE CASE | 35.77 | 27.95 | 26.01 | 24.37 | 22.97 | 23.30 | 22.28 | 23.38 | 23.87 | 25.44 |
| 35-ACRE CASE | 35.77 | 29.50 | 26.58 | 25.40 | 23.85 | 23.22 | 23.53 | 23.26 | 23.22 | 26.42 |

Table D-1 (cont.)

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WV N | | | | | | | | | | |
| BASE CASE - 10% ROI | 34.91 | 24.92 | 23.33 | 22.66 | 21.78 | 22.03 | 22.71 | 21.42 | 22.95 | 24.46 |
| BASE CASE - 15% ROI | 34.91 | 24.92 | 23.33 | 22.66 | 22.03 | 22.44 | 22.64 | 21.96 | 23.80 | 24.21 |
| 250-ACRE CASE | 34.91 | 26.55 | 24.38 | 22.86 | 22.56 | 22.14 | 22.68 | 22.29 | 22.70 | 24.88 |
| 150-ACRE CASE | 34.91 | 26.56 | 24.39 | 23.10 | 22.60 | 22.15 | 22.73 | 22.38 | 22.40 | 24.46 |
| 75-ACRE CASE | 34.91 | 26.79 | 24.81 | 23.71 | 22.42 | 22.67 | 21.82 | 22.25 | 22.79 | 23.85 |
| 35-ACRE CASE | 34.91 | 28.22 | 25.28 | 24.65 | 23.08 | 22.54 | 22.99 | 22.20 | 22.30 | 24.40 |
| WV S | | | | | | | | | | |
| BASE CASE - 10% ROI | 34.22 | 24.84 | 24.70 | 24.50 | 23.13 | 23.37 | 24.91 | 21.28 | 22.54 | 24.55 |
| BASE CASE - 15% ROI | 34.22 | 24.84 | 24.69 | 24.50 | 23.56 | 24.30 | 24.87 | 22.49 | 24.24 | 23.88 |
| 250-ACRE CASE | 34.22 | 26.39 | 24.99 | 24.50 | 23.86 | 23.51 | 24.49 | 23.23 | 23.70 | 24.52 |
| 150-ACRE CASE | 34.22 | 26.41 | 25.03 | 24.75 | 23.82 | 23.47 | 24.41 | 23.16 | 23.18 | 24.63 |
| 75-ACRE CASE | 34.22 | 26.91 | 25.78 | 25.75 | 23.97 | 25.41 | 23.97 | 23.65 | 24.35 | 24.94 |
| 35-ACRE CASE | 34.22 | 28.15 | 26.72 | 27.21 | 26.12 | 25.55 | 26.16 | 24.05 | 23.94 | 25.24 |
| WV SW | | | | | | | | | | |
| BASE CASE - 10% ROI | 34.09 | 24.68 | 24.39 | 23.98 | 22.57 | 22.90 | 24.31 | 21.03 | 22.32 | 24.29 |
| BASE CASE - 15% ROI | 34.09 | 24.68 | 24.39 | 23.99 | 22.99 | 23.88 | 24.48 | 22.27 | 24.05 | 23.65 |
| 250-ACRE CASE | 34.09 | 26.31 | 25.21 | 24.46 | 23.82 | 23.32 | 24.34 | 23.21 | 23.86 | 24.84 |
| 150-ACRE CASE | 34.09 | 26.31 | 25.21 | 24.69 | 23.77 | 23.34 | 24.10 | 23.32 | 23.33 | 24.93 |
| 75-ACRE CASE | 34.09 | 26.84 | 26.01 | 25.38 | 23.41 | 24.88 | 23.31 | 23.55 | 24.40 | 24.85 |
| 35-ACRE CASE | 34.09 | 28.39 | 26.89 | 26.75 | 25.34 | 24.79 | 25.21 | 23.82 | 23.76 | 25.03 |
| All WV | | | | | | | | | | |
| BASE CASE - 10% ROI | 34.48 | 24.91 | 24.23 | 23.68 | 22.52 | 22.75 | 23.78 | 21.20 | 22.58 | 24.40 |
| BASE CASE - 15% ROI | 34.48 | 24.91 | 24.22 | 23.68 | 22.86 | 23.50 | 23.82 | 22.18 | 23.97 | 23.91 |
| 250-ACRE CASE | 34.48 | 26.54 | 25.13 | 24.07 | 23.53 | 23.07 | 23.78 | 22.85 | 23.35 | 24.89 |
| 150-ACRE CASE | 34.48 | 26.54 | 25.14 | 24.31 | 23.51 | 23.07 | 23.71 | 22.96 | 22.92 | 24.76 |
| 75-ACRE CASE | 34.48 | 26.99 | 25.80 | 24.93 | 23.22 | 24.12 | 22.87 | 23.00 | 23.68 | 24.43 |
| 35-ACRE CASE | 34.48 | 28.51 | 26.49 | 25.97 | 24.41 | 23.91 | 24.23 | 23.09 | 23.09 | 24.80 |
| All E. KY | | | | | | | | | | |
| BASE CASE - 10% ROI | 35.09 | 25.35 | 24.84 | 24.38 | 23.23 | 23.66 | 24.97 | 22.37 | 23.77 | 25.60 |
| BASE CASE - 15% ROI | 35.09 | 25.35 | 24.85 | 24.37 | 23.66 | 24.59 | 25.00 | 23.53 | 25.42 | 24.82 |
| 250-ACRE CASE | 35.09 | 27.08 | 25.62 | 24.93 | 24.40 | 24.08 | 24.95 | 24.28 | 24.92 | 26.26 |
| 150-ACRE CASE | 35.09 | 27.08 | 25.62 | 25.10 | 24.39 | 24.08 | 24.81 | 24.43 | 24.56 | 26.33 |
| 75-ACRE CASE | 35.09 | 27.47 | 26.41 | 25.70 | 24.01 | 25.35 | 24.08 | 24.57 | 25.76 | 26.23 |
| 35-ACRE CASE | 35.09 | 29.02 | 27.42 | 26.95 | 25.79 | 25.38 | 25.99 | 24.79 | 25.06 | 26.58 |
| VA | | | | | | | | | | |
| BASE CASE - 10% ROI | 36.44 | 27.17 | 26.64 | 26.09 | 25.00 | 25.40 | 26.75 | 23.23 | 24.64 | 26.73 |
| BASE CASE - 15% ROI | 36.44 | 27.17 | 26.64 | 26.10 | 25.43 | 26.31 | 26.95 | 24.48 | 26.56 | 26.14 |
| 250-ACRE CASE | 36.44 | 28.92 | 27.52 | 26.53 | 25.89 | 25.77 | 26.78 | 25.48 | 26.38 | 25.15 |
| 150-ACRE CASE | 36.44 | 28.92 | 27.53 | 26.78 | 25.85 | 25.74 | 26.56 | 25.61 | 23.76 | 25.66 |
| 75-ACRE CASE | 36.44 | 29.56 | 28.28 | 27.39 | 25.62 | 27.24 | 25.66 | 26.08 | 27.01 | 25.11 |
| 35-ACRE CASE | 36.44 | 31.03 | 29.21 | 28.52 | 27.69 | 27.31 | 27.60 | 24.88 | 24.05 | 25.31 |
| All Regions | | | | | | | | | | |
| BASE CASE - 10% ROI | 34.91 | 25.31 | 24.73 | 24.19 | 22.97 | 23.29 | 24.50 | 21.76 | 23.15 | 25.01 |
| BASE CASE - 15% ROI | 34.91 | 25.31 | 24.73 | 24.19 | 23.35 | 24.13 | 24.58 | 22.88 | 24.74 | 24.45 |
| 250-ACRE CASE | 34.91 | 26.99 | 25.58 | 24.67 | 24.11 | 23.66 | 24.49 | 23.65 | 24.23 | 25.33 |
| 150-ACRE CASE | 34.91 | 26.99 | 25.59 | 24.90 | 24.09 | 23.66 | 24.37 | 23.77 | 23.54 | 25.34 |
| 75-ACRE CASE | 34.91 | 27.45 | 26.33 | 25.53 | 23.76 | 24.86 | 23.52 | 23.88 | 24.72 | 25.06 |
| 35-ACRE CASE | 34.91 | 29.01 | 27.18 | 26.68 | 25.31 | 24.73 | 25.19 | 23.84 | 23.80 | 25.38 |

Table E-1

Megawatt-Hours of Generation

| <u>Region</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| KY 1 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 2 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 3 | | | | | | | | | | |
| BASE CASE - 10% ROI | 2,123,435 | 2,128,837 | 2,134,238 | 2,139,640 | 2,145,041 | 2,150,443 | 2,155,394 | 2,121,634 | 2,121,634 | 2,121,634 |
| BASE CASE - 15% ROI | 2,123,435 | 2,128,837 | 2,134,238 | 2,139,640 | 2,145,041 | 2,150,443 | 2,155,394 | 2,121,634 | 2,121,634 | 2,121,634 |
| 250-ACRE CASE | 2,123,435 | 2,128,837 | 2,134,238 | 2,139,640 | 2,145,041 | 2,150,443 | 2,155,394 | 2,121,634 | 2,121,634 | 2,121,634 |
| 150-ACRE CASE | 2,123,435 | 2,128,837 | 2,134,238 | 2,139,640 | 2,145,041 | 2,150,443 | 2,155,394 | 2,121,634 | 2,121,634 | 2,121,634 |
| 75-ACRE CASE | 2,123,435 | 2,128,837 | 2,134,238 | 2,139,640 | 2,145,041 | 2,150,443 | 2,155,394 | 2,121,634 | 2,121,634 | 2,121,634 |
| 35-ACRE CASE | 2,123,435 | 2,128,837 | 2,134,238 | 2,139,640 | 2,145,041 | 2,150,443 | 2,155,394 | 2,121,634 | 2,121,634 | 2,121,634 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 4 | | | | | | | | | | |
| BASE CASE - 10% ROI | 323,925 | 374,160 | 424,395 | 474,629 | 423,534 | 447,754 | 461,457 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 323,925 | 374,160 | 424,395 | 474,629 | 423,534 | 447,754 | 461,457 | 0 | 0 | 0 |
| 250-ACRE CASE | 323,925 | 374,160 | 424,395 | 474,629 | 423,534 | 447,754 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 323,925 | 374,160 | 424,395 | 474,629 | 423,534 | 447,754 | 461,457 | 0 | 0 | 0 |
| 75-ACRE CASE | 323,925 | 374,160 | 424,395 | 416,285 | 423,534 | 438,972 | 472,038 | 0 | 0 | 0 |
| 35-ACRE CASE | 323,925 | 300,289 | 424,395 | 403,319 | 0 | 0 | 0 | 0 | 0 | 0 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| WV C | | | | | | | | | | |
| BASE CASE - 10% ROI | 675,656 | 711,542 | 680,236 | 587,926 | 590,798 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 |
| BASE CASE - 15% ROI | 675,656 | 711,542 | 680,236 | 587,926 | 573,229 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 |
| 250-ACRE CASE | 675,656 | 711,542 | 599,116 | 587,926 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 |
| 150-ACRE CASE | 675,656 | 711,542 | 599,116 | 587,926 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 |
| 75-ACRE CASE | 675,656 | 711,542 | 599,116 | 587,926 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 |
| 35-ACRE CASE | 675,656 | 610,306 | 599,116 | 570,163 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 | 34,223 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| WV E | | | | | | | | | | |
| BASE CASE - 10% ROI | 3,055,270 | 3,084,117 | 3,112,963 | 3,107,471 | 3,136,002 | 3,164,533 | 3,194,070 | 3,194,070 | 3,194,070 | 3,194,070 |
| BASE CASE - 15% ROI | 3,055,270 | 3,084,117 | 3,112,963 | 3,107,471 | 3,136,002 | 3,164,533 | 3,194,070 | 3,194,070 | 3,194,070 | 3,194,070 |
| 250-ACRE CASE | 3,055,270 | 3,089,002 | 3,112,963 | 3,107,471 | 3,136,002 | 3,164,533 | 3,194,070 | 3,194,070 | 3,194,070 | 3,194,070 |
| 150-ACRE CASE | 3,055,270 | 3,089,002 | 3,112,963 | 3,107,471 | 3,136,002 | 3,164,533 | 3,194,070 | 3,194,070 | 3,194,070 | 3,194,070 |
| 75-ACRE CASE | 3,055,270 | 3,089,002 | 3,112,963 | 3,107,471 | 3,136,002 | 3,164,533 | 3,194,070 | 3,194,070 | 3,194,070 | 3,194,070 |
| 35-ACRE CASE | 3,055,270 | 3,089,979 | 3,112,963 | 3,107,471 | 3,136,002 | 3,164,533 | 3,194,070 | 3,194,070 | 3,194,070 | 3,194,070 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| WV N | | | | | | | | | | |
| BASE CASE - 10% ROI | 21,530,733 | 21,835,448 | 21,669,331 | 21,550,402 | 21,846,927 | 20,397,537 | 19,737,796 | 18,842,834 | 18,764,416 | 18,701,353 |
| BASE CASE - 15% ROI | 21,530,733 | 21,835,448 | 21,669,331 | 21,547,871 | 21,851,469 | 19,403,986 | 19,742,119 | 18,830,782 | 18,829,724 | 18,830,612 |
| 250-ACRE CASE | 21,530,733 | 21,594,004 | 21,512,683 | 21,502,314 | 21,741,207 | 21,775,492 | 19,708,842 | 18,834,237 | 18,834,237 | 18,705,238 |
| 150-ACRE CASE | 21,530,733 | 21,593,990 | 21,512,683 | 21,502,314 | 21,725,959 | 19,391,344 | 19,700,787 | 18,836,945 | 18,837,703 | 18,707,946 |
| 75-ACRE CASE | 21,530,733 | 21,765,769 | 21,468,335 | 21,358,253 | 21,377,274 | 19,334,547 | 19,780,646 | 18,832,432 | 18,744,684 | 16,775,490 |
| 35-ACRE CASE | 21,530,733 | 21,413,446 | 21,478,832 | 20,370,008 | 19,297,988 | 18,765,704 | 19,188,656 | 18,419,165 | 18,419,283 | 16,444,314 |

Table E-1 (cont.)

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WV S | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WV SW | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All WV | | | | | | | | | | |
| BASE CASE - 10% ROI | 25,261,659 | 25,631,107 | 25,462,530 | 25,245,799 | 25,573,727 | 23,596,293 | 22,966,089 | 22,071,127 | 21,992,709 | 21,929,646 |
| BASE CASE - 15% ROI | 25,261,659 | 25,631,107 | 25,462,530 | 25,243,268 | 25,560,700 | 22,602,742 | 22,970,412 | 22,059,075 | 22,058,017 | 22,058,905 |
| 250-ACRE CASE | 25,261,659 | 25,394,548 | 25,224,762 | 25,197,711 | 24,911,432 | 24,974,248 | 22,937,135 | 22,062,530 | 22,062,530 | 21,933,531 |
| 150-ACRE CASE | 25,261,659 | 25,394,534 | 25,224,762 | 25,197,711 | 24,896,184 | 22,590,100 | 22,929,080 | 22,065,238 | 22,065,996 | 21,936,239 |
| 75-ACRE CASE | 25,261,659 | 25,566,313 | 25,180,414 | 25,053,650 | 24,547,499 | 22,533,303 | 23,008,939 | 22,060,725 | 21,972,977 | 20,003,783 |
| 35-ACRE CASE | 25,261,659 | 25,113,731 | 25,190,911 | 24,047,642 | 22,468,213 | 21,964,460 | 22,416,949 | 21,647,458 | 21,647,576 | 19,672,607 |
| All E. KY | | | | | | | | | | |
| BASE CASE - 10% ROI | 2,447,360 | 2,502,997 | 2,558,633 | 2,614,269 | 2,568,575 | 2,598,197 | 2,616,851 | 2,121,634 | 2,121,634 | 2,121,634 |
| BASE CASE - 15% ROI | 2,447,360 | 2,502,997 | 2,558,633 | 2,614,269 | 2,568,575 | 2,598,197 | 2,616,851 | 2,121,634 | 2,121,634 | 2,121,634 |
| 250-ACRE CASE | 2,447,360 | 2,502,997 | 2,558,633 | 2,614,269 | 2,568,575 | 2,598,197 | 2,155,394 | 2,121,634 | 2,121,634 | 2,121,634 |
| 150-ACRE CASE | 2,447,360 | 2,502,997 | 2,558,633 | 2,614,269 | 2,568,575 | 2,598,197 | 2,616,851 | 2,121,634 | 2,121,634 | 2,121,634 |
| 75-ACRE CASE | 2,447,360 | 2,502,997 | 2,558,633 | 2,555,925 | 2,568,575 | 2,589,415 | 2,627,432 | 2,121,634 | 2,121,634 | 2,121,634 |
| 35-ACRE CASE | 2,447,360 | 2,429,126 | 2,558,633 | 2,542,959 | 2,145,041 | 2,150,443 | 2,155,394 | 2,121,634 | 2,121,634 | 2,121,634 |
| All VA | | | | | | | | | | |
| BASE CASE - 10% ROI | 14339034 | 14505891 | 15134866 | 14777414 | 15868486 | 15023574 | 15363931 | 16455296 | 17368707 | 18552755 |
| BASE CASE - 15% ROI | 14339034 | 14505891 | 15134866 | 14778080 | 14833424 | 15023532 | 15472500 | 16455296 | 18355939 | 18294427 |
| 250-ACRE CASE | 14339034 | 14516621 | 14684765 | 15029789 | 14835977 | 15015167 | 15364766 | 16458321 | 18215708 | 18979464 |
| 150-ACRE CASE | 14339034 | 14516621 | 14684765 | 14803602 | 14835977 | 15027638 | 15366843 | 16891178 | 16761105 | 18482256 |
| 75-ACRE CASE | 14339034 | 14516621 | 14560432 | 14861643 | 14835977 | 14626314 | 15745919 | 16909042 | 18358965 | 18979464 |
| 35-ACRE CASE | 14339034 | 14675818 | 14478391 | 14723506 | 14444301 | 14626314 | 15484538 | 16458935 | 17360325 | 18656337 |
| Total Study | | | | | | | | | | |
| BASE CASE - 10% ROI | 42,048,053 | 42,639,995 | 43,156,029 | 42,637,482 | 44,010,788 | 41,218,064 | 40,946,871 | 40,648,057 | 41,483,050 | 42,604,035 |
| BASE CASE - 15% ROI | 42,048,053 | 42,639,995 | 43,156,029 | 42,635,617 | 42,962,699 | 40,224,471 | 41,059,763 | 40,636,005 | 42,535,590 | 42,474,966 |
| 250-ACRE CASE | 42,048,053 | 42,414,166 | 42,468,160 | 42,841,769 | 42,315,984 | 42,587,612 | 40,457,295 | 40,642,485 | 42,399,872 | 43,034,629 |
| 150-ACRE CASE | 42,048,053 | 42,414,152 | 42,468,160 | 42,615,582 | 42,300,736 | 40,215,935 | 40,912,774 | 41,078,050 | 40,948,735 | 42,540,129 |
| 75-ACRE CASE | 42,048,053 | 42,585,931 | 42,299,479 | 42,471,218 | 41,952,051 | 39,749,032 | 41,382,290 | 41,091,401 | 42,453,576 | 41,104,881 |
| 35-ACRE CASE | 42,048,053 | 42,218,675 | 42,227,935 | 41,314,107 | 39,057,555 | 38,741,217 | 40,056,881 | 40,228,027 | 41,129,535 | 40,450,578 |

Table F-1

**Weighted Average Wholesale Electricity Price (Lambda Cost)
(Constant 2001 Dollars per MWhr)**

| Region | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| KY 1 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 2 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 3 | | | | | | | | | | |
| BASE CASE - 10% ROI | 25.86 | 18.17 | 17.68 | 17.67 | 18.69 | 19.14 | 18.71 | 20.34 | 20.78 | 21.49 |
| BASE CASE - 15% ROI | 25.86 | 18.17 | 17.68 | 17.68 | 18.62 | 18.59 | 18.69 | 20.64 | 20.82 | 21.98 |
| 250-ACRE CASE | 25.86 | 18.42 | 17.47 | 17.60 | 18.83 | 18.36 | 18.86 | 20.71 | 20.90 | 21.73 |
| 150-ACRE CASE | 25.86 | 18.42 | 17.47 | 17.58 | 18.81 | 18.79 | 18.62 | 20.59 | 21.00 | 21.58 |
| 75-ACRE CASE | 25.86 | 18.46 | 17.47 | 17.42 | 18.61 | 18.58 | 18.43 | 20.74 | 20.84 | 21.86 |
| 35-ACRE CASE | 25.86 | 18.75 | 17.62 | 17.73 | 18.97 | 18.45 | 18.54 | 20.65 | 20.83 | 21.72 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| KY 4 | | | | | | | | | | |
| BASE CASE - 10% ROI | 24.21 | 18.17 | 17.64 | 17.67 | 17.65 | 18.14 | 17.73 | 0.00 | 0.00 | 0.00 |
| BASE CASE - 15% ROI | 24.21 | 18.17 | 17.64 | 17.68 | 17.61 | 17.59 | 17.74 | 0.00 | 0.00 | 0.00 |
| 250-ACRE CASE | 24.21 | 18.42 | 17.43 | 17.59 | 17.80 | 17.39 | 0.00 | 0.00 | 0.00 | 0.00 |
| 150-ACRE CASE | 24.21 | 18.42 | 17.43 | 17.58 | 17.79 | 17.79 | 17.69 | 0.00 | 0.00 | 0.00 |
| 75-ACRE CASE | 24.21 | 18.46 | 17.43 | 17.42 | 17.67 | 17.58 | 17.51 | 0.00 | 0.00 | 0.00 |
| 35-ACRE CASE | 24.21 | 18.75 | 17.61 | 17.71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| WV C | | | | | | | | | | |
| BASE CASE - 10% ROI | 25.87 | 18.17 | 17.68 | 17.67 | 18.69 | 19.15 | 18.71 | 20.34 | 20.78 | 21.49 |
| BASE CASE - 15% ROI | 25.87 | 18.17 | 17.68 | 17.68 | 18.62 | 18.59 | 18.69 | 20.64 | 20.82 | 21.98 |
| 250-ACRE CASE | 25.87 | 18.42 | 17.46 | 17.60 | 18.83 | 18.36 | 18.86 | 20.71 | 20.90 | 21.73 |
| 150-ACRE CASE | 25.87 | 18.42 | 17.46 | 17.58 | 18.81 | 18.79 | 18.62 | 20.59 | 21.00 | 21.58 |
| 75-ACRE CASE | 25.87 | 18.46 | 17.46 | 17.42 | 18.61 | 18.58 | 18.43 | 20.74 | 20.84 | 21.86 |
| 35-ACRE CASE | 25.87 | 18.75 | 17.62 | 17.73 | 18.97 | 18.45 | 18.54 | 20.65 | 20.83 | 21.72 |
| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
| WV E | | | | | | | | | | |
| BASE CASE - 10% ROI | 28.40 | 20.32 | 20.75 | 20.19 | 22.02 | 21.48 | 21.48 | 22.13 | 22.99 | 23.05 |
| BASE CASE - 15% ROI | 28.40 | 20.32 | 20.75 | 20.19 | 21.42 | 21.48 | 21.52 | 22.42 | 22.73 | 23.08 |
| 250-ACRE CASE | 28.40 | 20.32 | 20.50 | 20.18 | 21.43 | 21.48 | 21.48 | 22.61 | 22.74 | 23.07 |
| 150-ACRE CASE | 28.40 | 20.32 | 20.50 | 20.15 | 21.42 | 21.48 | 21.48 | 22.26 | 23.02 | 23.04 |
| 75-ACRE CASE | 28.40 | 20.32 | 20.51 | 20.21 | 21.42 | 21.48 | 21.48 | 22.34 | 22.94 | 23.07 |
| 35-ACRE CASE | 28.40 | 20.46 | 20.58 | 20.24 | 21.58 | 21.48 | 21.52 | 22.53 | 22.93 | 23.06 |

Table F-1 (cont.)

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WV N | | | | | | | | | | |
| BASE CASE - 10% ROI | 26.79 | 19.44 | 18.97 | 18.98 | 20.00 | 19.90 | 19.75 | 20.60 | 21.80 | 22.52 |
| BASE CASE - 15% ROI | 26.79 | 19.44 | 18.97 | 18.99 | 19.93 | 19.63 | 19.73 | 20.75 | 21.97 | 22.94 |
| 250-ACRE CASE | 26.79 | 19.70 | 18.75 | 18.91 | 20.14 | 19.37 | 19.82 | 20.83 | 21.82 | 22.73 |
| 150-ACRE CASE | 26.79 | 19.70 | 18.75 | 18.89 | 20.12 | 19.75 | 19.67 | 20.66 | 21.90 | 22.58 |
| 75-ACRE CASE | 26.79 | 19.72 | 18.75 | 18.72 | 19.94 | 19.62 | 19.53 | 20.78 | 21.85 | 22.98 |
| 35-ACRE CASE | 26.79 | 20.02 | 18.91 | 19.10 | 20.45 | 19.59 | 19.66 | 21.79 | 21.98 | 22.81 |
| WV S | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WV SW | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All WV | | | | | | | | | | |
| BASE CASE - 10% ROI | 26.96 | 19.51 | 19.15 | 19.10 | 20.22 | 20.11 | 19.99 | 20.82 | 21.97 | 22.60 |
| BASE CASE - 15% ROI | 26.96 | 19.51 | 19.15 | 19.11 | 20.08 | 19.89 | 19.98 | 20.99 | 22.08 | 22.96 |
| 250-ACRE CASE | 26.96 | 19.74 | 18.94 | 19.04 | 20.30 | 19.64 | 20.05 | 21.09 | 21.95 | 22.78 |
| 150-ACRE CASE | 26.96 | 19.74 | 18.94 | 19.01 | 20.28 | 19.99 | 19.92 | 20.89 | 22.06 | 22.65 |
| 75-ACRE CASE | 26.96 | 19.76 | 18.94 | 18.87 | 20.13 | 19.88 | 19.80 | 21.01 | 22.01 | 22.99 |
| 35-ACRE CASE | 26.96 | 20.04 | 19.09 | 19.21 | 20.61 | 19.86 | 19.92 | 21.90 | 22.12 | 22.85 |
| All E. KY | | | | | | | | | | |
| BASE CASE - 10% ROI | 25.64 | 18.17 | 17.67 | 17.67 | 18.52 | 18.97 | 18.54 | 20.34 | 20.78 | 21.49 |
| BASE CASE - 15% ROI | 25.64 | 18.17 | 17.67 | 17.68 | 18.45 | 18.42 | 18.52 | 20.64 | 20.82 | 21.98 |
| 250-ACRE CASE | 25.64 | 18.42 | 17.46 | 17.60 | 18.66 | 18.19 | 18.86 | 20.71 | 20.90 | 21.73 |
| 150-ACRE CASE | 25.64 | 18.42 | 17.46 | 17.58 | 18.64 | 18.62 | 18.46 | 20.59 | 21.00 | 21.58 |
| 75-ACRE CASE | 25.64 | 18.46 | 17.46 | 17.42 | 18.46 | 18.41 | 18.26 | 20.74 | 20.84 | 21.86 |
| 35-ACRE CASE | 25.64 | 18.75 | 17.62 | 17.73 | 18.97 | 18.45 | 18.54 | 20.65 | 20.83 | 21.72 |
| All VA | | | | | | | | | | |
| BASE CASE - 10% ROI | 29 | 20 | 21 | 20 | 22 | 21 | 22 | 22 | 23 | 23 |
| BASE CASE - 15% ROI | 29 | 20 | 21 | 20 | 21 | 21 | 22 | 22 | 23 | 23 |
| 250-ACRE CASE | 28.66 | 20.36 | 20.39 | 20.12 | 21.47 | 21.41 | 21.55 | 22.67 | 22.82 | 23.23 |
| 150-ACRE CASE | 28.66 | 20.36 | 20.39 | 20.1 | 21.46 | 21.44 | 21.49 | 22.27 | 22.99 | 23.14 |
| 75-ACRE CASE | 28.66 | 20.37 | 20.4 | 20.15 | 21.44 | 21.51 | 21.4 | 22.37 | 23.03 | 23.26 |
| 35-ACRE CASE | 28.66 | 20.53 | 20.5 | 20.23 | 21.69 | 21.5 | 21.57 | 22.59 | 22.97 | 23.21 |
| Total Study Area | | | | | | | | | | |
| BASE CASE - 10% ROI | 27.46 | 19.71 | 19.59 | 19.38 | 20.76 | 20.54 | 20.46 | 21.35 | 22.35 | 22.76 |
| BASE CASE - 15% ROI | 27.46 | 19.71 | 19.59 | 19.38 | 20.45 | 20.37 | 20.49 | 21.58 | 22.34 | 23.01 |
| 250-ACRE CASE | 27.46 | 19.87 | 19.35 | 19.33 | 20.61 | 20.17 | 20.56 | 21.71 | 22.27 | 22.93 |
| 150-ACRE CASE | 27.46 | 19.87 | 19.35 | 19.30 | 20.60 | 20.44 | 20.42 | 21.44 | 22.39 | 22.81 |
| 75-ACRE CASE | 27.46 | 19.89 | 19.35 | 19.23 | 20.49 | 20.38 | 20.31 | 21.55 | 22.39 | 23.06 |
| 35-ACRE CASE | 27.46 | 20.14 | 19.48 | 19.49 | 20.92 | 20.40 | 20.49 | 22.11 | 22.41 | 22.96 |

Table G-1

**Utilities' Environmental Clean-Up Capital Expenditures
(Constant 2001 Dollars)**

| <u>Region</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| KY 1 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KY 2 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KY 3 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 6,371,246 | 0 | 0 | 16,877,843 | 0 | 0 |
| KY 4 | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WV C | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WV E | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 7,410,199 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 7,410,199 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 7,410,199 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 7,410,199 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 7,452,999 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 7,915,047 | 0 | 0 | 0 | 0 | 0 |

Table G-1 (cont.)

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WV N | | | | | | | | | | |
| BASE CASE - 10% ROI | 209,349 | 0 | 0 | 18,675,821 | 21,263,721 | 0 | 0 | 43,012,286 | 0 | 0 |
| BASE CASE - 15% ROI | 209,349 | 0 | 0 | 19,812,967 | 21,604,468 | 0 | 0 | 43,012,286 | 0 | 0 |
| 250-ACRE CASE | 209,349 | 0 | 0 | 34,476,811 | 27,818,454 | 0 | 0 | 43,012,286 | 0 | 0 |
| 150-ACRE CASE | 209,349 | 0 | 0 | 33,304,565 | 27,434,487 | 0 | 0 | 43,012,286 | 0 | 0 |
| 75-ACRE CASE | 209,349 | 0 | 0 | 35,224,441 | 27,517,336 | 0 | 0 | 43,012,286 | 0 | 0 |
| 35-ACRE CASE | 209,349 | 0 | 0 | 36,333,508 | 18,898,112 | 0 | 0 | 43,012,286 | 0 | 0 |
| WV S | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WV SW | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All WV | | | | | | | | | | |
| BASE CASE - 10% ROI | 209,349 | 0 | 0 | 18,675,821 | 28,673,921 | 0 | 0 | 43,012,286 | 0 | 0 |
| BASE CASE - 15% ROI | 209,349 | 0 | 0 | 19,812,967 | 29,014,668 | 0 | 0 | 43,012,286 | 0 | 0 |
| 250-ACRE CASE | 209,349 | 0 | 0 | 34,476,811 | 35,228,653 | 0 | 0 | 43,012,286 | 0 | 0 |
| 150-ACRE CASE | 209,349 | 0 | 0 | 33,304,565 | 34,844,687 | 0 | 0 | 43,012,286 | 0 | 0 |
| 75-ACRE CASE | 209,349 | 0 | 0 | 35,224,441 | 34,970,336 | 0 | 0 | 43,012,286 | 0 | 0 |
| 35-ACRE CASE | 209,349 | 0 | 0 | 36,333,508 | 26,813,158 | 0 | 0 | 43,012,286 | 0 | 0 |
| All E. KY | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 6,720,191 | 0 | 0 | 16,877,843 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 0 | 6,371,246 | 0 | 0 | 16,877,843 | 0 | 0 |
| VA | | | | | | | | | | |
| BASE CASE - 10% ROI | 0 | 0 | 0 | 0 | 5,784,523 | 0 | 0 | 28,658,885 | 0 | 0 |
| BASE CASE - 15% ROI | 0 | 0 | 0 | 0 | 5,458,247 | 110,240 | 3,594 | 11,802,724 | 0 | 0 |
| 250-ACRE CASE | 0 | 0 | 0 | 0 | 5,581,295 | 0 | 111,617 | 28,658,885 | 0 | 0 |
| 150-ACRE CASE | 0 | 0 | 0 | 0 | 5,581,295 | 0 | 111,617 | 15,501,091 | 0 | 0 |
| 75-ACRE CASE | 0 | 0 | 0 | 0 | 5,354,984 | 110,134 | 3,594 | 29,000,638 | 0 | 0 |
| 35-ACRE CASE | 0 | 0 | 0 | 121,153 | 4,563,160 | 7,455 | 0 | 21,586,819 | 0 | 0 |
| All Regions | | | | | | | | | | |
| BASE CASE - 10% ROI | 209,349 | 0 | 0 | 18,675,821 | 41,178,634 | 0 | 0 | 88,549,014 | 0 | 0 |
| BASE CASE - 15% ROI | 209,349 | 0 | 0 | 19,812,967 | 41,193,105 | 110,240 | 3,594 | 71,692,853 | 0 | 0 |
| 250-ACRE CASE | 209,349 | 0 | 0 | 34,476,811 | 47,530,138 | 0 | 111,617 | 88,549,014 | 0 | 0 |
| 150-ACRE CASE | 209,349 | 0 | 0 | 33,304,565 | 47,146,172 | 0 | 111,617 | 75,391,220 | 0 | 0 |
| 75-ACRE CASE | 209,349 | 0 | 0 | 35,224,441 | 47,045,510 | 110,134 | 3,594 | 88,890,767 | 0 | 0 |
| 35-ACRE CASE | 209,349 | 0 | 0 | 36,454,660 | 37,747,564 | 7,455 | 0 | 81,476,948 | 0 | 0 |

Table H-1

Electricity Capacity Capital Investments by Type
(Constant 2001 Dollars)

| | 2001 | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | | 2010 | | | | | |
|----------------------------|----------|------------|----------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|------------|-----|-------------|-----|-------------|
| | MW Added | Capital \$ | MW Added | Capital \$ | MW Added | Capital \$ | MW Added | Capital \$ | MW Added | Capital \$ | MW Added | Capital \$ | MW Added | Capital \$ | MW Added | Capital \$ | MW Added | Capital \$ | MW Added | Capital \$ | | | | |
| BASE CASE - 10% ROI | | | | | | | | | | | | | | | | | | | | | | | | |
| VA | 0 | 0 | 0 | 0 | 288 | 115,392,000 | 365 | 146,052,000 | 364 | 145,548,000 | 384 | 153,592,000 | 394 | 157,736,000 | 591 | 236,376,000 | 0 | 0 | 0 | 0 | 561 | 224,284,000 | | |
| CC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| GT | 0 | 0 | 1,183 | 295,707,500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 520 | 728,000,000 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| BASE CASE - 15% ROI | | | | | | | | | | | | | | | | | | | | | | | | |
| VA | 0 | 0 | 0 | 0 | 288 | 115,392,000 | 365 | 146,052,000 | 364 | 145,548,000 | 384 | 153,592,000 | 394 | 157,736,000 | 541 | 216,376,000 | 0 | 0 | 0 | 0 | 561 | 224,284,000 | | |
| CC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| GT | 0 | 0 | 1,182 | 295,457,500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 520 | 728,000,000 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 250-ACRE | | | | | | | | | | | | | | | | | | | | | | | | |
| VA | 0 | 0 | 0 | 0 | 291 | 116,512,000 | 365 | 145,892,000 | 364 | 145,552,000 | 384 | 153,592,000 | 394 | 157,736,000 | 541 | 216,376,000 | 0 | 0 | 0 | 0 | 561 | 224,284,000 | | |
| CC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| GT | 0 | 0 | 1,179 | 294,792,500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 520 | 728,000,000 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 150-ACRE | | | | | | | | | | | | | | | | | | | | | | | | |
| VA | 0 | 0 | 0 | 0 | 291 | 116,512,000 | 365 | 145,892,000 | 364 | 145,552,000 | 384 | 153,592,000 | 394 | 157,736,000 | 541 | 216,376,000 | 0 | 0 | 0 | 0 | 561 | 224,284,000 | | |
| CC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| GT | 0 | 0 | 1,179 | 294,792,500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 520 | 728,000,000 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 75-ACRE | | | | | | | | | | | | | | | | | | | | | | | | |
| VA | 0 | 0 | 0 | 0 | 291 | 116,512,000 | 365 | 145,892,000 | 364 | 145,552,000 | 384 | 153,592,000 | 393 | 157,336,000 | 541 | 216,376,000 | 0 | 0 | 0 | 0 | 561 | 224,284,000 | | |
| CC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| GT | 0 | 0 | 1,179 | 294,792,500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 520 | 728,000,000 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 35-ACRE | | | | | | | | | | | | | | | | | | | | | | | | |
| VA | 0 | 0 | 0 | 0 | 292 | 116,736,000 | 365 | 145,894,000 | 364 | 145,552,000 | 384 | 153,592,000 | 384 | 157,736,000 | 530 | 212,148,000 | 0 | 0 | 7 | 1,745,000 | 0 | 0 | 564 | 225,796,000 |
| CC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| GT | 0 | 0 | 1,179 | 294,657,500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 520 | 728,000,000 | 0 | 0 | 0 | 0 | | |
| VA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

Table I-1

Major Coal Mine Direct Operating Costs by Category For Entire Study Area

| | Deep Mines \$/Ton | Surface Mines \$/Ton |
|------------------|----------------------|-------------------------|
| Labor | \$6.24 | \$4.30 |
| Materials/Supply | \$3.79 | \$8.36 |
| Trucking | \$1.12 | \$1.58 |
| Coal Washing | \$2.90 | \$0.40 |

Table J-1

**Average U.S. Wholesale Electricity Price (Lambda Cost)
(Constant 2001 Dollars per MWhr)**

| | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Base - 10% ROI | 37.25 | 22.54 | 22.44 | 22.32 | 23.11 | 22.22 | 22.32 | 23.15 | 23.51 | 24.00 |
| Base - 15% ROI | 37.25 | 22.54 | 22.44 | 22.32 | 23.06 | 22.19 | 22.33 | 23.30 | 23.65 | 24.12 |
| 250-Acre | 37.25 | 22.63 | 22.33 | 22.24 | 23.09 | 22.12 | 22.36 | 23.40 | 23.66 | 24.12 |
| 150-Acre | 37.25 | 22.63 | 22.33 | 22.25 | 23.10 | 22.19 | 22.28 | 23.34 | 23.64 | 24.06 |
| 75-Acre | 37.25 | 22.64 | 22.34 | 22.26 | 23.07 | 22.17 | 22.12 | 23.41 | 23.64 | 24.12 |
| 35-Acre | 37.25 | 22.78 | 22.40 | 22.27 | 23.27 | 22.20 | 22.30 | 23.36 | 23.58 | 24.15 |