Executive Summary: Carbon Tax as an Element of Tax Reform Agenda

Duke Energy appreciates the opportunity to make a submission to the President's Advisory Panel on Federal Tax Reform. Duke Energy believes that tax reform can and should advance economic growth. Moreover, tax reform can help the United States meet its environmental and energy challenges. The key points of this submission are as follows:

- **The Tax Reform Panel should consider a new kind of consumption tax – a tax on the carbon content of fossil fuels – as an element of a revenue-neutral tax reform package.** The Tax Reform Panel should consider introduction of a gradually phased-in tax on the carbon content of fossil fuels. A carbon tax could support tax reform, reduce carbon dioxide emissions, and advance sound energy and environmental policies.

- **A carbon tax can produce significant revenues that can be used for other tax reform initiatives**. For example, the Congressional Budget Office recently has outlined a carbon tax policy option that could generate $208 billion in revenues over the 2006-2015 period.

- **Adoption of a carbon tax should not increase the overall tax burden**. A carbon tax should be included as an element of a revenue-neutral tax reform package, with revenues from a carbon tax supporting reductions in inefficient existing taxes on productive labor and investment.

- **A carbon tax dovetails good tax policy and good climate change policy**. A climate change policy should be Federal, economy-wide and market-based. A carbon tax meets all of these criteria. Economists view a carbon tax as the most cost-effective and efficient of the available climate change policy options. A tax that starts at a modest rate and increases gradually and predictably over time can establish incentives throughout the U.S. economy to reduce carbon dioxide emissions with minimal disruption to the economy. Moreover, in encouraging a less carbon-intensive economy, a carbon tax improves long-term energy security.

Given the Tax Reform Panel's agenda and timeframe, and the parallel debate on climate change policy, Duke Energy respectfully suggests that the Panel consider the unique tax reform benefits of the carbon tax option. Further work will be needed to develop the details and parameters of any economy-wide carbon tax system. Duke Energy looks forward to participating in an on-going dialogue on this issue.

Duke Energy
April 29, 2005

Submission of Duke Energy Corporation to the Federal Tax Reform Advisory Panel

I. Introduction

On April 5, 2005, the President's Advisory Panel on Federal Tax Reform (the "Panel") invited interested parties to submit comments "regarding specific proposals to reform the tax code." Duke Energy Corporation ("Duke Energy") respectfully submits the following comments for the Panel's consideration. Duke Energy is a diversified energy company with a portfolio of natural gas and electric businesses, both regulated and unregulated.[1]

In order to meet the Panel's goals – simplifying tax laws, sharing the burdens and benefits of the tax structure in an appropriately progressive manner, and promoting economic growth – the Panel has been asked to consider strategies for shifting the tax code away from taxes on labor and investment and toward taxes on consumption. To this end, the Panel should give consideration to a new kind of consumption tax – an initially modest and gradually increasing tax on the carbon content of fossil fuels – that could generate billions of dollars of revenues that could be used to support other reforms of the tax code.

Because the tax base for such a policy is large – all fossil fuels sold in the United States – even a modest carbon tax would generate significant revenues. A rich economics literature supports both the cost-effectiveness of a carbon tax as a climate change policy and the potential benefits of using carbon tax revenues to offset reductions in distortionary

[1] Duke Energy supplies, delivers and processes energy for customers in the Americas. Headquartered in Charlotte, N.C., Duke Energy is a Fortune 500 company traded on the New York Stock Exchange under the symbol DUK. More information about the company is available on the Internet at: http://www.duke-energy.com. Duke Energy is actively engaged in the national debate about the future direction of U.S. climate change policy. Duke Energy recently articulated its updated position on U.S. climate change policy. *See* http://www.duke-energy.com/company/ehs/policies/gcc/.

taxes, such as those on labor and investment. Moreover, a carbon tax would serve other national policy goals, such as encouraging energy efficiency and conservation, mitigating air pollution, and decreasing the Nation's dependence on foreign sources of energy.

II. What is a Carbon Tax?

A. Description of a Carbon Tax

A carbon tax is an excise tax on the sale of fossil fuels – principally coal, petroleum products, and natural gas – based on their carbon content.[2] Fossil fuels are used for electricity generation, transportation, residential and commercial space heating, industrial processes, and other activities. Measurements of carbon content for different types of fossil fuels are readily available. Coal has a higher carbon content per unit heat content than petroleum, which in turn has a higher carbon content than natural gas.[3] The Congressional Budget Office (CBO) recently concluded that a carbon tax would be "relatively simple to administer."[4]

[2] For a primer on carbon taxes, *see* Congressional Budget Office, "Limiting Carbon Dioxide Emissions: Prices Versus Caps" (2005), available at www.cbo.gov (hereinafter, "CBO, Prices Versus Caps"). A carbon tax of the type described in this submission would be very different from the "Btu tax" concept proposed in 1993. The 1993 Btu tax would have applied to nearly all forms of energy (including nuclear and hydropower) based on their heat content, without regard to their different levels of carbon and therefore without regard to their contribution, if any, to global climate change. In addition, the Btu tax was not designed to be revenue neutral; rather, it was intended to generate new revenues for deficit reduction.

[3] The Department of Energy's Energy Information Administration (EIA) maintains estimates of the carbon content of different types of fossil fuels for purposes of annual reporting of U.S. greenhouse gas emissions. *See, e.g.*, Energy Information Administration, "Documentation for Emissions of Greenhouse Gases in the United States 2003" (December 2004) (hereinafter "EIA 2004"), at p. 27, n. 51 (citing to Energy Information Administration, "Documentation for Emissions of Greenhouse Gases in the United States 2002 (January 2003), at p. 185, Table 6-1). According to the EIA, the "carbon coefficient" for coal is approximately 26 million metric tons of carbon per quadrillion Btus. The approximate carbon coefficients for petroleum and natural gas are 20 and 15 respectively.

[4] Congressional Budget Office, "Budget Options" (Feb. 2005), at p. 338 (Revenue Option 53) (hereinafter "CBO, Budget Options").

B. Carbon Tax as a Tax Policy

A carbon tax offers an opportunity to shift taxation away from activities that are good for society (*e.g.*, labor and investment) on to activities that pose potential risks to society (*i.e.*, carbon dioxide emissions).

Taxes influence behavior in ways that may lead to economic distortions. Increasing the cost of a good or activity through a tax will result in the reduction in the use or consumption of the good or the diminishment of the activity. For this reason, some have criticized our current system's reliance upon payroll and income taxes as an unnecessary drag upon the two most fundamental elements of the U.S. economy – labor and investment. Reducing the cost of labor and investment through the reduction of taxes upon such inputs should lead to more vigorous economic growth.

Similarly, the lack of the proper recognition of social costs may also lead to economic distortions. Private parties consider their individual costs when deciding whether to consume a good or service; additional social costs generally are not taken into account. The over-consumption of a good or service relative to the social optimum likely will result if the social cost of the consumption of the good or service exceeds the private cost of such consumption (known to economists as a "negative externality"). In such cases, the costs of such negative externalities are borne by society as a whole.[5]

A properly applied carbon tax will lead to greater economic efficiency by recognizing possible costs associated with carbon dioxide emissions and allocating them to the appropriate private parties. Revenues generated by such a tax (which represent costs

[5] For a general discussion of the above points, *see*, Joint Committee on Taxation, *Description of Revenue Provisions Contained in the President's Fiscal Year 2006 Budget Proposals* (JCS-3-05) March 2005, pp. 138-9.

currently borne by society as a whole) could be used to reduce current taxes on labor or investment, resulting in even greater economic efficiency.

C. Carbon Tax as a Climate Change Policy

There is a concern that increasing greenhouse gas emissions from human activities may be influencing changes in the Earth's climate. Carbon dioxide emissions from fossil fuel consumption are the most prevalent greenhouse gas emissions in the United States, accounting for approximately 83% of the total.[6] Nearly all uses of fossil fuels involve combusting the fuels, resulting in the release of carbon dioxide to the atmosphere. Thus, a carbon tax would create incentives for reductions in carbon dioxide emissions throughout the entire economy.[7]

For several reasons, most economists see an initially modest and gradually increasing economy-wide carbon tax as the most cost-effective climate change policy.[8] First, a carbon tax is market-based. A carbon tax encourages reductions of carbon dioxide emissions wherever and however such reductions can be achieved at least cost. A tax based on carbon content creates an incentive for firms and households to select lower-

[6] EIA 2004 at p. x.

[7] *See* CBO, Budget Options, at p. 338 (asserting that a carbon tax "would give the United States' entire economy an incentive to reduce carbon emissions"). It also would be possible to establish taxes for certain sources of the other greenhouse gases, including methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. *See, e.g.*, Organisation for Economic Co-operation and Development, "The Potential for Using Tax Instruments to Address Non-CO_2 Greenhouse Gases: CH_4, N_2O, HFCs, PFCs, and SF_6," COM/ENV/EPOC/DAFFE/CFA(99)110/FINAL (2000).

[8] In 1997, 2500 economists, including eight Nobel Laureates, signed a statement calling for the application of market-based mandatory broad-based policies to address global climate change. The statement reads, in part:

> The United States and other nations can most efficiently implement their climate policies through market mechanisms, such as carbon taxes or the auction of emissions permits. The revenues generated from such policies can effectively be used to reduce the deficit or to lower existing taxes.

See http://www.rprogress.org/publications/econstatement.html.

carbon fuels, to conserve energy, to improve energy efficiency and to take other cost-effective steps that lead to reduced emissions of carbon dioxide.

Second, a carbon tax offers an administratively-feasible means of reaching practically all of the carbon dioxide-emitting activities in the economy. While individual fuel users (and therefore sources of carbon dioxide emissions) number in the hundreds of millions, the number of entities that control the import, production, and sale of fossil fuels is far smaller.

Third, compared to other market-based approaches, such as "cap-and-trade" policies, a carbon tax provides greater certainty regarding cost impacts. For this reason, economic experts believe that a carbon tax is more efficient than a cap-and-trade policy for addressing climate change over the long term.[9]

Finally, as discussed below, economists commend carbon taxes as a climate change policy that can generate revenues that can be "recycled" to reduce inefficient taxes, such as taxes on labor and investment.

D. Collection of Carbon Taxes

In some sectors of the economy, it may be feasible to impose a tax on individual firms based on their emissions of carbon dioxide, but the CBO has concluded that a "tax on carbon emissions would entail the fewest economic distortions if it was administered 'upstream,' where carbon enters the economy (that is, when fossil fuels are imported or produced domestically), rather than 'downstream,' where carbon actually enters the atmosphere when fossil fuels are burned."[10]

[9] *See, e.g.* Richard G. Newell and William A. Pizer, "Regulating Stock Externalities Under Uncertainty," 45 *Journal of Environmental Economics and Management* 416 (2003); CBO, Prices Versus Caps.

[10] CBO, Budget Options, at p. 338.

A tax on the carbon content of fossil fuels could be collected at any of several different points in the fuel chain for each type of fuel. Most studies of carbon tax implementation emphasize the importance of selecting points of collection that: (1) provide incentives to the broadest possible range of fuel users and (2) minimize administrative costs. A carbon tax applicable to as few as 2,000 entities could reach all of the fossil fuel consumed in the U.S. economy.[11]

III. Tax Rates and Potential Revenues

A. Levels of Revenues

The CBO has explained that "most proponents of imposing a [carbon] tax agree that starting off with a modest levy and increasing it over time would be the best approach because it would give the economy time to adjust to using less fossil fuels and allow for flexibility in policymaking."[12] One tax rate approach that the CBO has cited with approval would begin at approximately $12 per metric ton of carbon (mtC) in 2005 and rise to $17/mtC in 2015.[13] References to particular proposed tax rates are offered for purposes of illustration only; Duke Energy has not taken a position on the most appropriate tax rates.

[11] *See* Tim Hargrave, "U.S. Carbon Emissions Trading: Description of an Upstream Approach," Center for Clean Air Policy (March 1998), available at www.ccap.org. The CCAP study analyzed an "upstream" carbon dioxide "cap-and-trade" program, but its results are equally applicable to a tax on the carbon content of fossil fuels.

[12] CBO, Budget Options, at p. 338. For a review of the economics literature on setting a carbon price, *see* Congressional Budget Office, "Uncertainty in Analyzing Climate Change: Policy Implications," (January 2005), at pp. 31-2; *see also* Raymond J. Kopp, "Near-Term Greenhouse Gas Emissions Targets," RFF Discussion Paper 04-41 (November 2004), available at www.rff.org.

[13] CBO, Budget Options, at p. 339 (citing William D. Nordhaus and Joseph Boyer, *Warming the World* (2000), at p. 13). Note also that Resources for the Future (RFF) recently proposed an economy-wide carbon tax; the RFF tax would start at $5 mtC in 2006 and increase by $5 every other year. *See* Dallas Burtraw and Paul Portney, "A Carbon Tax to Reduce the Deficit," in *New Approaches on Energy and the Environment: Advice for the President* (Richard Morgenstern and Paul Portney eds. 2004) at p. 19 (hereinafter, "Burtraw and Portney").

Establishing appropriate carbon tax rate structures will require more policy dialogue with federal officials and others.

Even at a modest rate, a carbon tax could generate significant revenues because it would have a substantial tax base – all sales of fossil fuels in the U.S. economy. The CBO has determined that, because the carbon content of fossil fuel annually consumed in the United States is approximately 1.5 billion mtC,[14] each $1/mtC of carbon tax would generate roughly $1.5 billion in revenues.[15]

To get a sense of the potential revenues, consider the carbon tax policy recently outlined by the CBO in its "Budget Options" paper.[16] The paper describes a phased-in carbon tax that would generate revenues of about $208 billion over the 2006-2015 period, while reducing U.S. carbon dioxide emissions.[17]

B. Uses of Revenues

A rich economics literature has analyzed the revenue-neutral use of carbon tax revenues to reduce inefficient taxes. These analyses generally find significant benefits resulting from shifting taxation from productive activities (such as labor and investment)

[14] Note that the Energy Information Administration annually measures the carbon content of fossil fuels consumed in the United States. The EIA has estimated that 1.601 billion metric tons of carbon were consumed in 2003. *See* EIA 2004, at p. 19.

[15] Congressional Budget Office, "The Economics of Climate Change: A Primer" (April 2003), at p. 40. As a point of reference, each $1/mtC increase in carbon tax corresponds roughly to a ¼ cent/gallon increase in the price of gasoline.

[16] CBO, Budget Options, at p. 338.

[17] CBO, Budget Options, at p. 338. Under the RFF tax proposal described in footnote 13 above, the tax in 2010 would be $15/mtC and would generate $26 billion in that year, roughly equivalent to one percent of expected federal tax revenues. By 2020, the RFF proposed tax would be $40/mtC and generate $75 billion in revenues in that year. Burtraw and Portney at pp. 20-21.

onto carbon. Various studies have assessed the economic impacts of "recycling" carbon tax revenues to reduce marginal rates for a range of different types of taxes.[18]

IV. Implementation Issues

A. Economic Impacts

A carbon tax can be expected to raise revenues and encourage firms and households to shift to lower-carbon fuels and to reduce their use of fossil fuels overall. If phased in gradually, as recommended by economic experts, the impacts of a carbon tax on the U.S. economy need not be substantial.[19]

Any carbon policy would have more significant impacts on people who rely on carbon-intensive industries for their livelihoods, *e.g.*, coal miners and coal mining communities. In addition, a carbon policy would affect lower-income households

[18] *See, e.g.*, Ian W.H. Parry, "Fiscal Interactions and the Case for Carbon Taxes over Grandfathered Carbon Permits," Resources for the Future Discussion Paper 03-46 (October 2003), available at www.rff.org; Lans A. Bovenberg and Lawrence H. Goulder, "Neutralizing the Adverse Industry Impacts of CO_2 Abatement Policies: What Does It Cost?" in *Behavioral and Distributional Effects of Environmental Policy* (C. Carraro and G. Metcalf, eds. 2002); Mustafa H. Babiker, Gilbert E. Metcalf, and John Reilly, "Tax Distortions and Global Climate Policy," MIT Joint Program on the Science and Policy Change, Report No. 85 (May 2002); William G. Gale and Kevin A. Hassett, "The Effects of Environmental Tax Shifting on U.S. Capital Formation," Redefining Progress (January 2000) (recommending the use of carbon tax revenues to fund a new investment tax credit); Jeff M. Hammond, *et al.*, "Tax Waste Not Work: How Changing What We Tax Can Lead to a Stronger Economy and a Cleaner Environment," Redefining Progress (1997); Lawrence H. Goulder, "Environmental Taxation and the Double Dividend: a Reader's Guide," 2 *International Tax and Public Finance* 157 (1996); Dale W. Jorgenson and Peter J. Wilcoxen, "The Economic Effects of a Carbon Tax," 237 in Henry Lee (ed.), *Shaping National Response to Climate Change*, (1995); Lans A. Bovenberg and Ruud A. De Mooij, "Environmental Levies and Distortionary Taxation, 84 *Annual Economic Review* 1085 (1994).

[19] See, by way of illustration, the economic analysis of the climate change policy proposed by the National Commission on Energy Policy (NCEP), which would effectively set a carbon price at an initially modest and gradually increasing level. NCEP concluded that the policy would, for instance, reduce annual GDP growth by only one one-hundredth of one percent from 2010 through 2020. National Commission on Energy Policy, "Ending the Energy Stalemate: a Bipartisan Strategy to Meet America's Energy Challenges – Economic Analysis of the Commission Proposals" at p. 18 (Dec. 2004). The Energy Information Administration evaluated the NCEP proposal, and concurred that, under this proposed policy, "the overall annual growth rate of the economy between 2003 and 2025, in terms of both real GDP and potential GDP, is not materially altered." Energy Information Administration, "Impacts of Modeled Recommendations of the National Commission on Energy Policy" at p. 41 (April 2005).

proportionally more than higher-income households because the former spend a greater portion of their income on energy and energy-intensive goods.[20] Note, however, that a range of tax policies is available to mitigate such burdens.[21] For example, a carbon tax could be combined with limited credits for hard-hit industries and/or tax relief targeted at low-income households.[22]

B. Adjustments for Non-Fuel Uses and Carbon Sequestration

Some fossil fuels are put to non-combustion uses, and thus do not result in carbon dioxide emissions. For example, some firms buy refinery products for asphalt, and chemical manufacturers use natural gas as a feedstock. In addition, energy companies currently are exploring methods of capturing carbon dioxide emissions at power plants and sequestering them underground. With such methods, it is possible to combust fossil fuels for electricity generation, but prevent carbon dioxide emissions from reaching the atmosphere. A carbon tax system could be designed to free uses of fossil fuels that do not

[20] Note that this basic distribution of impacts is shared by any broad-based climate policy, including a cap-and-trade program. *See* Congressional Budget Office, "Who Gains and Who Pays Under Allowance Trading? The Distributional Effects of Different Policy Designs," at p. ix.

[21] *See* James M. Poterba, "Tax Policy to Combat Global Warming: on Designing a Carbon Tax," in *Global Warming: Economic Policy Responses* (Rodriger Dornbusch and James M. Poterba eds., 1991) (hereinafter "J. Poterba") at p. 83 ("[T]he distributional effects of the carbon tax do not appear insuperable. A combination of income tax and transfer policies could be used to neutralize the tax [impacts] for most households.")

[22] J. Poterba, for example, explains how a credit could mitigate the burden of the tax on low-income households:

> Allowing each household a tax credit equal to the first 1 or 2 percent of income devoted to purchasing energy would enable the tax authorities to alter the *average* price of energy, hence blunting the carbon tax's redistributive effects, while preserving the marginal price effects of the tax.

J. Poterba at p. 83 (emphasis in the original). Stanford Professor Lawrence Goulder has explained how a similar crediting approach could alleviate the impact of the tax on energy-intensive industries and their workers. *See* Lawrence H. Goulder, "Confronting the Adverse Industry Impacts of Carbon Dioxide Abatement Policies: What Does it Cost?," Resources for the Future Climate Issues Brief No. 23, at pp. 3-4 (2000), *available at* http://www.rff.org

result in new atmospheric carbon dioxide emissions from the burdens of the tax, by providing tax exemptions or credits to persons engaged in such activities.[23]

V. Conclusion

For the reasons described above, Duke Energy strongly recommends that the Panel consider how an initially modest and gradually increasing economy-wide carbon tax could be integrated into the tax code in a revenue-neutral way. The revenues generated by such a tax could be used to offset revenue losses associated with other tax reforms.

Given the page constraints of the Panel's Request for Proposals, this proposal necessarily touches only upon the basics of a carbon tax. If the Panel is interested in exploring this concept in greater detail, we would be pleased to provide more information. For further information, please contact David Mitchell, Director, Federal Governmental Affairs at 202-331-8090.

Respectfully yours,

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[23] The tax system also could credit agricultural and forestry activities that sequester carbon dioxide.