UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
ARIZONA PUBLIC SERVICE COMPANY, ET AL.	)	Docket Nos. STN 50-592 STN 50-593
(Palo Verde Nuclear Generating Station, Units 4 and 5)	)	March 6, 1979

STATEMENT OF ISSUES OF THE PEOPLE OF THE STATE OF CALIFORNIA AND THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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Introduction

The People of the State of California and the Public Utilities Commission of the State of California (CPUC) hereby submit to the Atomic Safety and Licensing Board (ASLB or "Board") its Statement of Issues pursuant to the Board's "Order Following Special Pre-Hearing Conference" (Order) dated March 6, 1979.

The Order of the Board directed the Interested State participants to "file a statement of issues it wishes to raise within sixty (60) days after the [NRC] staff issues the Draft Environmental Impact Statement (DES)."

The CPUC wishes to point out to the parties and to the NRC staff that pursuant to Board's directive and with Title 10 CFR 2.715(c) there is no requirement upon the interested states to

"take a position with respect to [those] issues." Thus, the issues the CPUC sets forth in this statement are those subject matters it wishes to raise as relevant and pertinent to this proceeding which it desires to participate in through possible introduction of evidence, interrogation of witnesses, and offer of "advise to the Commission" as provided in 2.715(c). No attempt will be made to "take a position" or assert a "contention" on those issues raised as permitted by 2.715(c) and the Board's Order. Every effort will be made to state the issues we wish to raise and participate in during the proceedings in "sufficient detail and preciseness to define ... concrete issue[s] ... appropriate for adjudication in this proceeding" pursuant to the Board's Order.

The following statement is an informational list of issues on which the CPUC may comment, testify, submit evidence, cross examine, on otherwise participate in. Active CPUC participation on each item is dependent upon information presently under development. In submitting this statement of issues to the A.S.L.B., the CPUC does not assume the burden of proof which properly rests with the joint applicants to submit evidence in support of the application.

Therefore, any issue set forth herein, which needs first be adequately demonstrated by Joint-Applicants as part of a prima facie case, must await that proof before becoming a viable issue in this case on which CPUC would intend to introduce evidence.

1. Are Capital, operating, and maintenance costs of the proposed Palo Verde Nuclear Generating Station, Units 4 and 5 (PVNGS4&5), as presented by the Applicants and quoted from

Energy Information Agency of D.O.E. and the "CONCEPT" code, and as presented by the NRC Staff, reliable and accurate representations of what actual project costs are likely to be? What exactly is the basis for each of these estimates and how was each developed? What other data was relied upon in developing each and in what way was it used? What is the detailed breakdown of costs reflected in the total capital, operating and maintenance cost estimates presented by each source? Are these estimates reasonable when compared to estimates for other nuclear units currently being made? Are these estimates reasonable when compared with costs which have been incurred for nuclear units which have already been constructed? Are these estimates reasonable when compared to the estimates used by these parties for the alternatives to the project which each has discussed?

2. Are capital, operating, and maintenance costs of the coal-fired alternative to PVNGS4&5, as presented by the NRC staff and those quoted from EIA and the Concept code, and as presented by the Applicants, reasonable and accurate representations of what the actual costs for a coal-fired alternative would really be? What exactly is the basis for each of these estimates and how was each developed? What other data was relied upon for developing each and in what way was it used? What is the detailed breakdown of costs reflected in the capital, operating and maintenance cost estimates presented by each source? Are these estimates reasonable when compared to estimates for other coal projects currently under consideration? Are these estimates reasonable when compared to costs which have been incurred for coal-fired

projects which have already been constructed? Are these estimates reasonable when compared to the estimates used by these parties for the PVNGS4&5 project?

3. What are reasonable capital, operating, and maintenance cost estimates for non-nuclear and non-coal alternatives to the proposed PVNGS4&5 units? What should serve as the basis for each estimate and how should each be developed? What data should be relied upon and in what way should it be used? What is the detailed breakdown which should be reflected by the total capital, operating and maintenance cost estimates for each alternative? What estimates for the alternatives are reasonable for comparison against the estimates for the nuclear and coal options which are found to be reasonable? What use should be made of cost estimates currently being made for projects utilizing the various alternative technologies to the nuclear and coal options? What use should be made of costs actually incurred for projects already built which utilize the various alternatives to the nuclear and coal options?

4. What discount rates should be used in computing "levelized" or "present worth" cost estimates for the PVNGS4&5 and alternatives to it? What approach and basis should be used for developing a discount rate percentage? Should the discount rate used reflect the point of view of ratepayers, society at large, the utilities and their owners, the perspectives and principles on which regulatory processes and decisions are based, some combination of these points of view, or some other factors and points of view. What data and parameters are appropriate for use in any methodology found

to be appropriate for development of a discount rate? Precisely what methodology should be used to calculate the discount rate? What factors should be reflected in the discount rate? How do the methods, approaches, results, bases, points of view, etc. used by the NRC and its staff, the Applicants, EIA and the CONCEPT code compare to those used in serious and scholarly economic research and analysis and in professional practice? What are the effects and implications of various discount rate levels, approaches, etc.? Are the approaches, points of view, methods and results used by the NRC staff, the Applicants, EIA and the CONCEPT code reasonable and appropriate here?

5. Are capacity factors of the proposed PVNGS4&5 and the coal alternative, as presented by the Applicants and quoted from EIA, and as presented by the NRC staff, reliable, accurate and reasonable estimates for each of these technologies? Are the capacity factors used reasonable in light of both specific system design and general operational experience with similar units? What exactly is the basis for the estimate used by each party and what ought to be the basis for estimating capacity factor? What approaches, methods, data and points of view ought to be used for projecting capacity factors and what approaches, methods, data and points of view were employed by each party? What is the breakdown by year for the capacity factor projections used and what variations are likely? Are the estimates used reasonable when compared to performance for units which have already been constructed? Are the estimates used by each party consistent for one technology, as compared to the estimates used for other

technologies? What are the effects and implications of the capacity factor estimates used by the various parties?

6. What are reasonable estimates for capacity factors for the non-nuclear and non-coal generating alternatives? What should be the bases, approaches, methods, data and points of view employed in developing these capacity factor estimates? What is the breakdown, year by year, for the capacity factor projections for the alternatives and what variations are likely? What role should the performance of existing units of each technology type play in determining the capacity factors and what role should be played by projections which have been made for similar projects being planned or under construction? What capacity factor levels for the alternatives are reasonable to compare with the levels for the nuclear and coal options found to be reasonable? What are the effects and implications of various capacity factor levels which might reasonably be made?

7. Are fixed charged rates used for the PVNGS4&5 and the coal alternative, as presented by the Applicants, as quoted from the EIA and the CONCEPT code, and as presented by the NRC staff, reliable, accurate and reasonable estimates for each of these technologies? What fixed charge rates should be used for the non-nuclear and non-coal alternatives? In determining fixed charge rates, what points of view, approaches, methods, models, data, parameters and estimates should be employed and what factors estimates which were presented here? What is the breakdown by year for the fixed charge rates for each technology and what variations are likely? What are the effects and implications of the fixed charge rate estimates used by each party?

8. Are nuclear fuel cost estimates used for the PVNGS4&5, as presented by the NRC staff, as quoted from EIA, and as presented by the Applicants, reliable, accurate and reasonable? Are the costs reasonable in light of specific system design and general operational experience with similar units? In determining the fuel costs, what points of view, approaches, methods, models, data, parameters and estimates should be used and what factors should be recognized and given weight? Which of these were used and recognized by the various parties who have developed estimates which are presented here? What is the breakdown, year by year for the fuel costs and what variations are likely? Upon what forecasts are assumptions concerning supply, demand, price, cost availability for the various commodities and processes in the nuclear cost assessments based and on what forecasts or assumption should they be based?

9. What are the supply, demand, price, cost and availability prospects for the various steps in the nuclear fuel "cycle" by year throughout the duration of the project in terms of both likely results and variations which may reasonably be expected? What assumptions, data, parameters, estimates, forecasts and predictions, models, results and conclusions were relied upon by the Applicants and the NRC staff in formulating their assessments on the demand, supply, price, cost and availability outlook and how were these outlook assessments incorporated into the overall economic, reliability and planning assessments of those parties to

evalute the proposed project? Are these assumptions, data, parameters, estimates, forecasts and predictions, models, analyses, results, conclusion and uses appropriate, accurate, reliable and reasonable? Precisely, how were the assumptions, data, parameters, estimates, forecasts and predictions, models, analyses, results, and conclusions used at each stage of the analytical process and exactly how were the the outlook assessments used in the planning and analyses for the proposed project and are those uses reasonable, accurate and appropriate? Are these assumptions, data, parameters, estimates, forecasts and predictions, models, analyses, results, conclusions and uses reasonable and supportable as the best assumptions, etc. in light of historical data and published research and analysis on the subject? Are these assumptions, etc. acceptable when compared with and consistent with corresponding assumptions, etc. which were used by the parties for the coal alternative? Are they acceptable when compared with and consistent with the assumptions, etc. found to be reasonable for the coal and non-nuclear and non-coal alternative? What are the effects and implications for the planning, economic and reliability analyses of the assumptions, etc. used by the parties and are those acceptable effects and implications?

10. What are fuel costs, as seen by the ratepayers, likely to be for the coal alternative? Are coal fuel costs, as presented by the Applicants, reliable accurate and reasonable? Are the costs reasonable in light of the system design characteristics judged reasonable for this alternative and in light of the operational experience with similar projects? In determining fuel coal costs which would be seen by ratepayers, what points of view, approaches, methods, models, data, parameters and estimates should be used and what factors should be recognized and given weight? Which of these were used and recognized by the parties which developed estimates which are presented in this case, and exactly in what way were they used and given weight? What is the breakdown, year by year, for the fuel costs and what variations are likely? On what forecasts of or assumptions concerning supply, demand, price, cost and availability for the various commodities and services involved in the coal fuel "cycle" are the coal fuel cost assessments based and on what forecasts or assumptions should they be based? What are the effects and implications on fuel costs of the points of view, methods, models, data, parameters, and estimates used by the Applicants and the NRC Staff?

11. What are the supply, demand, price, cost and availability prospects for the various steps in the coal fuel "cycle" by year throughout the duration of the project life for the coal alternative found to be reasonable, in terms both of likely results and variations which may reasonably be expected? What assumptions, data, parameters, estimates, forecasts and predictions, models, analyses, results, conclusions and uses are appropriate, accurate, reliable and reasonable?

Precisely how were the assumptions, etc. used at each stage of the analytical process and exactly how were the outlook assessments used in the planning for the PVNGS 4&5 project and in analyzing the coal alternative to it? Are these uses and analyses reasonable, accurate and appropriate? Are these assumptions, etc. reasonable and supportable as the best assumptions, etc. in light of historical data and published research and analysis? Are they reasonable when compared to those which are found to be reasonable for the nuclear fuel "cycle" and are the coal and nuclear assumptions, etc. used by each party consistent and reasonable in a comparative sense? What are the implications for and effects on the planning, economic and reliability analyses of the assumptions, etc. made by the parties and are these acceptable?

12. What would be the costs seen by ratepayers for fuel for non-nuclear, non-coal alternatives to the proposed project? What bases, points of view, approaches, methods, models, data, parameters, assumptions, and estimates should be used and what factors should be given weight? In what way should they be used and given weight? What breakdown, year by year, is likely for the costs for these alternatives and what variations are likely? On what forecasts of or assumptions concerning supply, demand, price, cost and availability for the various commodities and processes and services involved in each fuel "cycle" or technology should the cost calculations for ratepayers be based?

13. What are the supply, demand, price, cost and availability prospects for the various steps in the fuel "cycle" or utilization technology for each alternative by year throughout the duration of the project life for each alternative which are reasonable, in terms both of likely results and variations which may reasonably be expected? What assumptions, data, parameters, estimates, forecasts and predictions, models, methods, analyses, results, conclusions and uses are appropriate, accurate and reasonable for each?

14. Do alternative power sources exist to the PVNGS 4&5 which are lower or similar in cost, more reliable and environmentally sound? The feasibility of utilizing the following supply technologies should be considered: oil- or natural gas-fired steam-electric, internal-combustion, gas-turbine, combined cycle generating plants, hydroelectric

plants, conventional coal- and solvent-refined coal-fired steam-electric plants, gasified coal-fired, combined cycle plants, fluidized-bed coal plants, magnetohydro-dynamic combustion of coal, biomass-fired steam-electric plants, geothermal plants, wind-powered, and tidal-powered electrical generation, solar water - and space-heating, solar thermal steam-electric generation, photovoltaic cell , fuel cells, nuclear fusion, cogeneration, reconditioning or repowering existing power plants, uprating existing plants and operating existing peaking or intermediate plants as baseload? In addition, the feasibility of utilizing the following non-generational alternatives should be considered: energy conservation, load management, purchases of capacity and energy, and power pooling.

15. Are the Project Applicants able to finance the proposed PVNGS 4&5? What are the Applicants' capital structures as presently constituted? Can they issue sufficient debt and equity to finance PVNGS 4&5? For each Applicant, what percentage of project financing will be internal, and what percentage external? What kind of external financing does each applicant anticipate? Is it reasonable? Is conventional financing optimal? Has "project financing" been considered? If the Applicants are proposing to use project financing for PVNGS 4&5, what are the details of the arrangement? What are construction expenditures for PVNGS 4&5 likely to be on a year by year basis? What else is each Applicant financing in that same time frame? Given the capital structure of each Applicant, can they issue sufficient debt and equity to finance both PVNGS 4&5 and their other construction projects and still maintain adequate financial ratios? What would be the impact on each Applicant of unknown delays in licensing and construction on their financing program?

16. Is PVNGS 4&5 or equivalent capacity necessary to meet the energy and power requirements of the Applicants? What are the estimated loads, available capacity and energy, and energy and capacity reserve margins and reliability criteria on which such a conclusion should be based?

17. What forecasts of energy and power demand are most appropriate for use in this case for the Applicants? What approaches, methods, data, models, assumptions, and estimates should be used to develop these forecasts and what factors should be given weight? How do the approaches, data, and the resulting forecasts found to be appropriate compare to those used by the Applicants and by the NRC Staff?

18. What levels of reliability and reliability criteria are appropriate for the Applicants planning? What is the basis for these levels and the criteria chosen? What levels and criteria were employed by the Applicants in its planning and analytical work that led to choosing to build PVNGS 4&5 and exactly how were these used in those processes? Exactly what models, data, assumptions, approaches, analyses and results are reasonable for use in making these reliability assessments for planning nuclear generating units and comparing them to other alternatives? How do the Applicants' models, etc. compare to these? What are the implications and effects of the choices made by the Applicants for reliability levels and criteria and for models, etc.?

19. Considering the proposed project and all alternatives to it mentioned here, what effect would the size and unit performance and operating characteristics of each alternative have on system reliability, performance and planning? How should these effects be considered in comparing the alternatives in terms of economic and system reliability comparisons and other planning characteristics? What assumptions, approaches, methods, models, data and estimates should be used to reflect these size, performance and operating characteristics in the economic and system reliability and planning assessments? How, exactly, did the Applicants and the NRC Staff consider these effects in their economic, system reliability and planning assessments and precisely what assumptions, etc. did they use? In particular, this issue should address what are sometimes referred to as equivalent load carrying capacity characteristics and the need for make up or supplemental energy for each alternative as compared to any other?

20. Exactly what models, approaches, assumptions, data, and analyses should be employed in making cost assessments for comparing each of the alternatives (including the PVNGS 4&5) under consideration here and what factors should be considered in each assessment and in what way? How do these models, etc. and factors and treatments compare to those used by the NRC Staff and the Applicants? What are the effects and implications of the models, approaches, etc. used by the NRC Staff and the Applicants?

21. What sources, estimates, data assumptions, models and methods are appropriate to recognition of the costs of power plant decommissioning in the economic comparison approaches found useful here and what factors should be recognized and considered in this analysis? Precisely what sources, etc. were used by the Applicants and the NRC Staff in their assessments here and how do these compare to those found reasonable and preferable here? What are the effects and implications of the treatment on this matter made by each party?

22. What sources, estimates, data, assumptions, models and methods are appropriate to recognition of the costs of all fuel cycle "back-end" processes and requirements in the economic comparison approaches found useful here and what factors should be recognized and considered in these analyses? Precisely what sources, etc. were used by the Applicants and the NRC Staff in their assessments and how do these compare to those found reasonable here? What are the effects and implications of the treatment on this matter made by each party?

23. Exactly how should planning and operating flexibility for utility systems be considered when comparing the proposed PVNGS 4&5 project and the alternatives to it? What factors, criteria, approaches, points of view and analyses are appropriate to this comparison? Precisely how did the Applicants and the NRC Staff address considerations of flexibility in their assessments and what factors, etc. did they use? What are the implications and effects of the approaches taken by each of these parties?

24. Is there reason to believe that the proposed project would provide cheaper energy at the time it comes on line than could be obtained from existing resources? What approaches, assumptions, methods, points of view, factors, criteria, data and analyses should be used to address this question? What are the implications of any result or conclusion on this matter? More generally, is there reason to believe that utility ratepayers or society at large will be better off in the long run if the plant is completed as early as possible (even if there is no need for the plant at the time it is completed to provide reliable service at that time)? What approaches, etc. should be used to make this determination? What are the implications of any conclusions or results on this matter.

25. What will be the appropriate or best mix of facilities for economic and reliable service and operating and planning flexibility for the Applicants at the time the PVNGS 4&5 units or alternatives to them would be expected to be operational? What will be

the actual mix for each alternative? Mix should be defined to include type of unit (steam turbine, storage device, gas turbine, etc.) and the use generally to which each unit is suited (peaking, intermediate, fast start, etc.). What are the implications for the license being sought here of the comparison between the appropriate or best mix and that which would result under each alternative?

26. What will be the appropriate or best mix of facilities for economic and reliable service and for operating and planning flexibility for the Applicants at the time the PVNGS 4&5 units or alternatives to them would come on line in terms of the fuels used to run the units owned by the Applicants? What will be the actual mix under each alternative? In particular, will the Applicants be too dependent on nuclear generation if the proposed PVNGS 4&5 units are constructed, and what impact would an extremely long forced outage of the PVNGS 4&5 units have on ratepayer and social costs, on reliability and on flexibility? What are the implications for the license being sought here of the answers to these questions?

27. What would be the actual capacity and energy outputs of the PVNGS 4&5 units to the electrical grids of the Applicants? In particular, what would the use at the plant be from the output of the units and what would be the losses in transmission? What effect does this have on the economics of the proposed project?

28. Is the schedule proposed by the Applicants for the design, material and service acquisition, construction, testing, fuel loading, power ascension and operation of the PVNGS 4&5 units the most reasonable which can be estimated? If not, what might be a more

reasonable alternative? How do the Applicants' and the NRC Staff's schedules assumed here compare to other projections used for such assessments by the NRC? What are the implications on power costs, reliability, and planning and operating flexibility of the schedule found to be most reasonable? What schedules are equally reasonable or likely for each of the alternatives and what effects and implications do these have? What delays are possible or likely in the various schedules for all alternatives and what effects would these have on costs, financing, reliability, and flexibility?

29. Whether Arizona Public Service (APS) is sufficiently experienced and capable to act as project manger and operator for PVNGS 4 & 5. Does APS' previous general experience indicate it would be competent to handle the technical, financial, and managerial functions associated with project management of PVNGS 4 & 5? How does APS propose to train its reactor operators? Will the operators for PVNGS 4 & 5 be dedicated solely to those units or will they be part of an operator pool associated with PVNGS Units 1 through 5?

30. Whether responsible and accurate descriptions have been provided of pertinent aspects of PVNGS site, alternative sites, and Western Participants transmission line corridor, including regional geology, soils descriptions, and siesmicity. Are descriptions adequate to allow prediction of the effects of construction, vulnerability to long term and flash erosion, foundation stability under predictable seismic disturbance, and geologic determinants of other impacts?

What are the effects of the establishment of evaporation ponds and the termination of existing effluent discharges on migratory and local wildlife? What measures will be required to protect surface and groundwater from the concentrated salt deposits of the evaporation ponds over the geological life of the disposal site?

In addition to specific described sites, what areas of proposed site and transmission line construction are sensitive to potential archaeological disturbance? What provisions for identification of previously unrecognized areas will be taken during construction? What strategies and actions will be required to prevent the loss or

destruction of significant sites and of material significant to the past and present Native American culture? How will sites be protected from unnecessary public identification during consideration of site risks and mitigation measures?

What information and techniques are available and will be used to identify and quantitatively estimate permanent and significant transient air quality hazards, flash flood hazards to proposed desert construction, and anticipated water balance of aquifers to be tapped by proposed well fields?

Are the sources for population data used to estimate electric power demand, vulnerability to effects of construction and operation, and optimum siting plans for dispersed and centralized alternative supply systems compatible with population data used for related federally required plans such as water supply, wastewater treatment, solid waste disposal, and transportation plans?

Do considerations of aesthetic effects of project, cooling water, and transmission line construction sufficiently take account of and document areas affected, "view sheds" and related scenic values, severity of effects, and available mitigation measures?

Do discussions of ecology include reviews by competent specialists of the potential effects of proposed construction on endangered species of plants and animals? Is adequate attention given to the effects of roads, fences, pipelines, well fields, and evaporation ponds in modifying desert biomes? What mitigation measures are considered to mitigate wildfowl disease propagation in evaporation ponds?

Are systematic accounts presented of the mining and industrial health effects of selection of specific fuel alternatives? Are health and safety discussions coupled to systems accident analyses in such a way as to adequately identify the population at risk for specific classes of project-associated accident?

What socioeconomic displacements are specifically attributable to project effects, direct job creation or elimination, and associated investment required per job created? What are the indirect effects of project implementation which impinge on rate setting determinations?

31. Whether the environmental impacts of the construction, operation, maintenance, and decommissioning of the proposed PVNGS 4 & 5 project have been adequately considered. Have the environmental setting of the project and the technical characteristics of all component systems and other related facilities of the project been described in sufficient detail to allow an adequate assessment of all environmental impacts? Have the cumulative effects of five units at the PVNGS site been fully considered in relation to each other and to other related elements of infrastructure? What primary and secondary environmental effects may result from the project's construction, operation, maintenance, and decommissioning, and what will be the extent and significance of such environmental effects? What primary and secondary effects on economic and population growth may result from the project's construction, operation, maintenance, and decommissioning? To what extent are the mitigation measures proposed by the applicants and the NRC capable of reducing or eliminating adverse environmental impacts? Would alternative or supplemental

mitigation measures be capable of further reducing or eliminating adverse environmental impacts? What are the effects of mitigation requirements on the project's cost and reliability? Are the mitigation measures proposed by the applicants and the NRC appropriate in view of the environmental and economic benefits and disbenefits of the proposed and alternative or supplemental mitigation measures?

What primary and secondary effects on economic and population growth may result from the use of power generated by PVNGS 4 & 5? What will be the environmental impacts of these effects on economic and population growth? What effects will the investment of capital in an out-of-state powerplant have on economic and population growth in California? Can there be any mitigation of adverse growth-related impacts implemented directly or indirectly by either the NRC or the Applicants? In terms of the environmental impacts of PVNGS 4 & 5 construction, operation, maintenance, and decommissioning and the extent to which adverse impacts will be mitigated, is the proposed project justifiable?

32. Whether the Western Participants 500 KV Transmission System will be a feasible means of transmitting power from PVNGS 4 & 5. Have all costs of the transmission system been determined in a complete and acceptable manner? Can all necessary approvals be obtained for the transmission system, including approvals by federal, state, and local governmental agencies and Native American tribal organizations? Will the transmission system have sufficient public acceptance for its implementation?

What is the reliability of the transmission system? Is it prudent to use a route that is parallel to existing transmission lines due to considerations of cost, reliability, aesthetics, environmental impacts, effects on transportation and agriculture, and public acceptability? Have the environmental setting of the transmission corridor and the technical characteristics of all component systems and other related facilities been described in sufficient detail to allow an adequate determination of all environmental impacts of transmission system construction, operation, maintenance, and decommissioning? What will be the primary and secondary environmental effects of transmission system construction, operation, maintenance, and decommissioning, and what will be the extent and significance of such environmental effects? Have the cumulative effects of parallel transmission systems been fully considered in relation to each other and to other related elements of infrastructure? To what extent are the mitigation measures proposed by the Applicants and the NRC capable of reducing or eliminating adverse environmental impacts? Would alternative or supplemental mitigation measure be capable of further reducing or eliminating adverse environmental impacts? What are the effects of mitigation requirements on the project's cost and reliability?

What alternative transmission routes exist? How do the environmental setting and technical characteristics of alternative transmission systems differ from the currently planned Western Participants Transmission System? What would be the cost and reliability of alternative transmission systems? Could all necessary approvals be obtained for alternative transmission systems, including approvals from governmental agencies and Native American tribal organizations? What would be the

public acceptability of alternative transmission systems? What is the relationship of the Western Participants 500 KV Transmission System to the SDG&E/APS proposed San Diego-Arizona 500 KV Transmission Project? Does the latter project obviate the need for the Western Participants line? Should the San Diego-Arizona Project be considered as a full or partial alternative to the Western Participants Project.

What are the health effects of 500 KV transmission systems? To what extent would any health effects be compounded by placing a 500 KV transmission system parallel to existing high voltage transmission systems?

Are the Applicants' estimates of transmission line losses reasonable in terms of operational experience with existing systems and the ambient and extreme conditions under which the transmission system will operate?

33. Whether sufficient cooling water will be available for PVNGS 4&5. Is availability of sewage treatment plant effluent dependent on realization of uncertain predictions of demographic growth? What is the net effect of creation of a major demand for cooling water on the overall water supply and water economics of the region? Given the Maricopa Association of Governments Water Quality Management Plan ("208 Plan") and other documents, are predictions of usable effluent volume reliable? What are the upper and lower limits of reasonably expected variations in the water supply predictions and how might these problems affect project construction and operation? What volumes and services of reliable alternative water supplies are available, and what are the expected effects of commitment of such supplies of the project? If Central Arizona Project (CAP) commitments to local Native American groups are met, what level of groundwater overdraft may be created by operation of the proposed project throughout its design life?

What modifications of the existing sewage treatment system will be required to provide reliable service to the power plant complex? What costs will be associated with these modifications? For periods when the 91st Ave. treatment plant may not provide sufficient water, what will be required to obtain water from other sources such as the 23rd Ave. plant or from groundwater? What are the expected environmental consequences of such further supply commitment? What are the predicted incidences of treatment upset or plant failures caused by floods, toxic wastes, management failures, and other reasonably predictable causes during the operating period of PVNGS

4&5? How might improper treatment, toxic wastes, or other treatment irregularities affect the suitability of the wastewater for cooling systems? What monitoring systems are planned and what procedures are available to mitigate the effects on the project of treatment plant failures? What are the specific water quality problems associated with alternative cooling water sources, what mitigation measures will be required to make these waters suitable for cooling system use, and what will be the net effect on blowdown and effluent water quality of the required water treatment programs? What are the effects of use of groundwater as an alternative or supplemental source? In what ways would groundwater quality, availability, and recharge balance be affected by such use? Taking into account existing hydrologic records, water rights, and other associated concerns, can groundwater serve as a reliable supply for the proposed project? What ecological and water quality effects are associated with termination of the existing treatment plant effluent discharges?

What effects will development of principle and proposed alternative cooling water supplies have on existing users and beneficial uses of surface and groundwater? What are the expected ecological effects of establishing evaporation ponds? How will salt deposits in ponds be prevented from forming short and long term threats to beneficial uses of groundwater? Are groundwater recharge or use of marginal groundwater supplies affected by commitment of cooling water supplies to the proposed project?

Why do NRC and Joint-Applicants safety reports and environmental documents describe PVNGS 1, 2, 3, 4 and 5 radically different mapped locations and areas for reservoir storage and evaporation ponds? What is the explanation of the various descriptions supplied, what degree of confidence can be placed in the last supplied description, and what changes in evaporative regimen, water use rates, and associated water quality are implied by the design changes indicated in successive documents?

What are the capacities of the various reservoirs and evaporation ponds? Numbers and maps given in diagrams so far published by project proponents and the NRC are usually areas, not volumes. What actions are available to mitigate interruptions in water supply which exceed the margins provided by reservoir capacity? How were safety allowances in water supply systems determined and what is the expected frequency and nature of events which may cause supply interruptions to exceed safety margins?

What are the costs and operating problems associated with failure of the wastewater treatment plants to maintain designed standards of water quality? Can allowances be made to encourage water conservation in the Phoenix area without jeopardizing the required water supply increase necessary to sustain the proposed project? How can operation of the proposed project be made consistent with incentives to increase water conservation? To what extent are proposed water use patterns contributory to overdrafting of groundwater, encouragement of subsidence, and general overcommitment of reliable water supplies in the region?

34. How are Project Applicants proposing to take care of property damage and liability insurance associated with the entire range of PVNGS related accidents? Is insurance obtainable? How much does it cost? Is an offshore insurance arrangement under consideration?

35. What does the 28 March 1979 accident at the Three Mile Island Nuclear Generating Station, Unit 2, imply as to the accuracy of the Joint-applicants and the NRC staff's estimates of capital costs, capacity factor, start-up dates, and energy costs for PVNGS 4&5? The NRC staff and the ACRS made some reactor safety recommendations in NUREG-0560 and "Interim Reports on Three mile Island Nuclear Station Unit 2", respectively, upon review of the accident sequence. What associated additional capital investment, delay in start-up time, and reduction in capacity factors may be caused by implementation of each recommendation for changes in plant design, plant instrumentation, plant operation and maintenance procedures, operator training, and control room layout during either the design stage or the construction stage of PVNGS 4&5?

Concurrently, there have been a number of parallel investigations by the Congress, and various federal, state and local agencies and private organizations. What implications do such investigations with their proposals for changes in plant design, operation, and maintenance; emergency evacuation plans; environmental monitoring; and construction and operating license review procedures have for increased capital investment, delay in start-up time, and reduction

in capacity factor for PVNGS 4&5? How should the Three Mile Island accident, with its associated reactor down-time affect the estimation of an average capacity factor for the PVNGS 4&5?

What bearing should the Three Mile Island accident have upon the need for a NEPA review of "Class 9" events for individual reactors? What impact would the requirement of such review by the NRC staff have upon the timing of this licensing procedure? What implication does the potential for a Three Mile Island "type" accident with its associated consequences on plant operation have for the continued ability of the utilities involved to finance PVNGS 4&5 as well as any other nuclear plants in which they may invest? What problems are associated with continued maintenance and operation of other facilities and with maintenance of service when severe financial strains or insolvency are created by the massive failure of a specific project such as the Three Mile Island accident?

36. The NRC staff has identified, in NUREG-0410, 133 generic tasks whose resolutions affect reactor safety, environmental impacts, or safeguards. Of these generic issues, 22 have been combined into 17 "unresolved safety issues", each being, in the view of the NRC staff, "potentially significant from a public safety standpoint" and, for each, resolution is "likely to result in NRC action on the affected plants." (SER, Appendix H, p. 12)

The NRC staff will develop recommendations for changes in plant design, instrumentation, operation, maintenance, and operator training, derived from resolution of these generic issues. What reasonably predictable capital investments, delays in start-up times, and reductions in capacity factors may be caused by implementation of these recommendations during the design, construction, and operation of PVNGS 4 & 5?

Are there additional generic issues which do not fall within the scope of the amended section 210 of the Energy Reorganization Act, but whose resolution or lack thereof may have significant bearing upon the accuracy of the joint applicants' or NRC staff's estimates of capital costs, capacity factors, start-up dates, energy costs, and associated environmental impacts for PVNGS 4 & 5?

37. Whether the NRC in fact relied in any way upon the conclusions or assumptions drawn from WASH-1400. Staff states (p. 7-4, DES) that no use was made of WASH-1400 in arriving at their conclusions on environmental risk, but alternative methods and assumptions actually used are not provided for review. Whether the procedures used by the staff, drawn from Proposed Annex to Appendix D, 10 CFR part 50, is adequate.

38. Has there been adequate assessment of the range of potential accidents at PVNGS 4 & 5? For each potential accident has there been sufficient consideration of the resulting impacts to the environment? What bearing does a consideration of the most severe accident class have upon the adequacy of proposed emergency evacuation plans?

39. Whether sufficient quantities of uranium fuel will be available at a reasonable cost over the anticipated project lifetime. How will the issues surrounding mining, milling, conversion, enrichment, fabrication, and transporting of nuclear fuel affect the cost, reliability, and environmental impacts associated with PVNGS 4 & 5? How will both large and small uranium reserves affect the cost of ore, availability, the regional environmental impacts and cost of mining, and the ability to mitigate significant environmental effects? How will different tailing assay factors affect the cost and availability of fuel for PVNGS 4 & 5? What are the implications of low and high growth rates, in terms of numbers of reactors built, for the costs and continued availability of nuclear fuel? Given current uncertainties surrounding future nuclear fuel orders, what are the likelihoods that insufficient investments might be made at each stage of the fuel cycle, such that availability of fuel will be jeopardized. What are the sources of nuclear fuel and for each applicant, will it be owned or leased? How does each applicant propose to finance its nuclear fuel requirements? Have the applicants considered setting up an energy trust? What escalation rates for nuclear fuel costs have been projected? Are these rates reasonable?

40. Will sufficient quantities of zirconium be available to ensure an adequate supply of nuclear grade zirconium for fabrication of fuel tubing for PVNGS 4 and 5? How many suppliers of nuclear grade zirconium can current consumption support? Will an adequate number of suppliers be available to fulfill demands? How will the health hazards and safety practices in these plants, and their relation to zirconium production, affect the supply of fuel tubing? How might price and availability be affected by mitigation of any hazards and practices? How will the radioactive tailings disposal problems be handled in the plants? How will the current "zircon sands" tailings disposal problems affect the cost, reliability and environmental impacts associated with this project?

41. What effect will prospective spent fuel storage modes have on plant costs and reliability, and environmental impacts, and what modelling techniques were used to compute these factors? What are the consequences associated with the Federal Government not resolving the spent fuel storage issue by 1988? What are the current spent fuel storage modes under consideration? What provisions have been made at PVNGS 4 and 5 to enable it to cope with the possibility that "no Federal decision" will be made when on-site storage capacity is filled? What cost will be incurred by the applicant in case (i) the spent fuel is shipped to a Federal storage site? (ii) the spent fuel continues to be stored on-site? What will be the impact on project costs and operation if the Federal government decides on an "Interim Storage Option" as opposed to permanent disposal? What measures will the Federal Government have to take to ensure ample interim storage capacity?

42. Are the low-level radioactive disposal sites capable of accommodating all the low-level wastes that will be generated by currently operating power reactors, as well as those that are anticipated to come on-line in the future including Palo Verde 4 and 5? If so, for how long will these sites be capable of receiving these wastes? What are the transportation costs involved? Does PVNGS 4 and 5 have sufficient low-level radioactive waste disposal capability on-site? Alternately, is there sufficient interim storage capacity until Federal sites become available?

43. Given the current "state-of-the-art" knowledge, what are the most probable modes of decommissioning for PVNGS 4 and 5? What are the time period and costs involved? Are these reasonable? How will the decommissioning costs be financed? Will they be financed through negative salvage, or through a requirement for a bond or other type of "upfront financing"? What quantities of radioactive material will be generated and what will their radioactivity levels be? Are there enough disposal sites for disposing of the radioactive wastes generated during decommissioning and decontamination? What are the current gaps in knowledge and what steps are being taken to resolve these? How might any gaps in knowledge affect decommissioning costs?

44. Does the existing "Participation Agreement" between the Joint-Applicants provide an adequate arrangement to assure reasonable costs, reliability, environmental and safety standards?

Respectfully submitted,

/s/ VINCENT V. MacKENZIE

Vincent V. MacKenzie

Counsel for the People of the State of California and the Public Utilities Commission of the State of California

June 20, 1979

CERTIFICATE OF SERVICE

I hereby certify that I am a citizen of the United States, over the age of 18 years, with business address at 5066 State Building, San Francisco, California, and am not a party to nor interested in Arizona Public Service Compan , et al. (Palo Verde Nuclear Generating Station, Units 4 and 5), Dockets Nos. STN 50-592 and STN 50-593 before the Atomic Safety and Licensing Board.

On June 20, 1979, in San Francisco, California, I personally deposited in the United States mail copies of STATEMENT OF ISSUES OF THE PEOPLE OF THE STATE OF CALIFORNIA AND THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA, addressed as follows:

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Each copy was enclosed in a sealed envelope and all postage thereon fully prepaid.

I certify under penalty of perjury that the foregoing is true and correct.

/s/ SANDRA REDD

Sandra Redd