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Central Systems for Machine Gaming: A Good Policy?

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Monday, December 22, 2003

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Fiscal crisis or no, machines are going to be an issue for a long time. Unsatisfied demand for machines and Class III tribal casinos that are beyond State control ensure that pressure for State-licensed and State-taxed machines will remain, this Fall, next Spring, and so on into the foreseeable future.

Not all gaming expansion proposals are created equal. The ones that surfaced in 2003 differ in just about every relevant respect: whether machines should be lotteries or legalized by new gaming law, the kind of device (video poker or reel-spinning machines), their number, where they are located, how heavily they are taxed, and who regulates them. One aspect of the policy debate that so far has been below the radar screen is a systems issue: should slot machines be connected to a single State-wide computer system? Or should these machines be controlled by computer systems already in use in casino and racino environments and regulated by methods proven in Nevada, New Jersey, Mississippi and other gaming States?

Exhibit 1: States with Video Lottery Terminals

State	Machines	Date	Centralized Monitoring System	Who Administers It?
Rhode Island	VLTs(VP) at tracks	1992	Yes	Lottery-Gtech contract
Delaware	VLTs(VP/VS) at tracks	1995	Yes	Lottery-IGT contract
*West Virginia	VLTs(VP/ VS/TS)at tracks, bars & fraternal org.	1994	Yes	Lottery operated [IGT System]
Oregon	VLT(VP) at bars, etc.+ one track	1992	Yes	Lottery operated [Gtech System]
South Dakota	VLTs(VP) at bars, ect.	1989	Yes	Lottery-IGT contract
**Louisiana	VP at tracks and bars, etc.	1992	Yes	State Police operated
**New Mexico	VGM and TS at tracks and fraternal org.	1997	Yes	Gaming Control Board operated-[IGT(Sci Games)]

VP: Video Poker
VS: Mechanical Reel
TS: Traditional Slot
*West Virginia: In 1999 the legislation was extended to include mechanical reels (video slots). In 2002 VLTs were expanded to include bars and restaurants with AB licenses.
**Louisiana and New Mexico are not lottery machine States.

Source: Christiansen Capital Advisors, LLC, Casino Association of Louisiana

At first sight central systems sound like a good idea. Video lottery terminals (VLTs) have been connected to central systems in half a dozen States for more than a decade (Exhibit 1), and, as legislators must be asking themselves, how can you have too much security?

On closer examination, however, video lotteries and casino slot operations are different businesses with different systems requirements. Video lottery terminals are exactly what they sound like: player-operated terminals of computer networks. Slot machines are self-contained random devices. Although virtually all slot machines in North America today are connected to computer monitoring systems these box games are "smart": the random number generator (typically a chip) that determines what happens when a player tries the device resides inside the box, not on a computer in some remote location or on a server in cyberspace.

There are hundreds of different slot machine box games from a long list of suppliers—and new ones come to market every month. Getting a central system to communicate with this endlessly proliferating device population is endlessly complicated. Given the extensive controls provided by computer monitoring systems designed for casino slot applications it is also probably unnecessary. It's reasonable to ask whether the taxpayers who pay, one way or another, for central systems receive benefits commensurate with their substantial cost where slot gaming is concerned. The difficulty Louisiana has experienced in implementing its slot machine central systems law suggests that the answer to this question may be No, and that for slot machines central systems are a solution in search of a problem

Let's take a look at the pros and cons of central monitoring systems:

PRO	**CON**
Provided they work, central monitoring systems can: ➢ Report machine activity. ➢ Help ensure machine security and integrity. ➢ Help ensure that licensees meet financial obligations to government.	➢ Existing casino monitoring systems provide adequate control. ➢ Overlaying existing monitoring systems adds costs: in Louisiana these added costs will total $1 million annually. ➢ Louisiana has experienced difficulty in implementing a central monitoring system. ➢ Lottery/totalizator TIM systems and casino slot machine monitoring systems serve fundamentally different purposes. ➢ TIM systems and monitoring systems aren't interchangeable. ➢ Adapting TIM systems to slot machines deprives casino operators of needed flexibility in maintaining a competitive mix of machine game offerings.

History

Slot gaming and video lotteries offer many of the same games and may be difficult for the consumer to distinguish, but the two forms of gambling are legally distinct and are the products of different histories.

Slot Machines

Slot machines originated as self-contained electro-mechanical random devices. Computer systems were added later. When computer technology became affordable casinos connected their slots to mainframe monitoring systems for accounting and control purposes: today few if any casino or racino slots aren't online. In the 1990s several factors converged to produce an explosion in the number of casino machine games: video slot technology, computers able to link progressive jackpot machines in widely separated locations, cashless systems, ever-stronger consumer preferences for games branded with intellectual property from television, movies, comic strips and video games. Casinos today have a bewildering variety of machine games to choose from, including video poker that to players is indistinguishable from video poker on lottery terminals.

Slot machines are made by a multiplicity of vendors. Unlike lottery central systems, which typically communicate with a limited number of devices, slot monitoring systems have open architectures and are designed to communicate with machines from many manufacturers. From the casino's point of view this open systems architecture is an essential business requirement, for the casino must constantly adjust the mix of machine games it offers to keep abreast of shifting consumer preferences. Unlike storefront video lottery agencies, casinos need monitoring systems that allow them to easily swap devices in and out of casino floors.

Video Lotteries

Video poker machines were added to a handful of State lotteries in the early 1990s (the genesis and evolution of lottery machine gaming is presented in Appendix A). Video lottery terminals, or VLTs, were connected to central lottery computer systems when they were first deployed and have subsequently evolved on this pattern: as player-operated terminals of central lottery systems. VLTs and central systems evolved together. Although several manufacturers make video lottery terminals and/or central computer lottery systems the number of VLT machines lotteries have to choose from is nowhere near as wide as the number of box games available to casinos and their slot gaming clientele.

What, exactly, are video lottery terminals? Early on, VLTs meant video poker. They still do in jurisdictions that make clear distinctions between video poker and self-contained casino slot box games; Louisiana and Ontario are examples. But no two State gambling laws are exactly alike, and as machine gaming has spread across North America distinctions between video lottery games and casino slot machines have blurred.

This is particularly true when machines are brought in under lottery laws. Delaware, which used its unusually liberal lottery law as the basis for a highly successful racino industry, defines "video lottery machine" as "any machine in which bills, coins or tokens are deposited in order to play in a game of chance in which the results, including options available to the player, are randomly and immediately determined by the machine. A machine may use spinning reels or video displays or both, and may or may not dispense coins or tokens directly to winning players. A machine shall be considered a video lottery machine notwithstanding the use of an electronic credit system making the deposit of bills, coins or tokens unnecessary." (29 Del. Laws § 4803 (g)) It's hard to think of a gaming device that wouldn't qualify as a video lottery machine under Delaware's definition.

The Louisiana Experience

Louisiana's central systems law provides a case study of the pros and cons of machine monitoring systems. The Louisiana experience is especially informative because Louisiana allows the full spectrum of machine gaming: video poker at truck stops and pari-mutuel racetracks and off-track betting facilities, and slot machines at riverboats, a land-based casino, and racetracks ("racinos"). Louisiana law also makes a clear distinction between video poker and slot machines.

The legislature set out the arguments for implementing a central monitoring system for slot machines in a 1999 amendment to Louisiana's riverboat gaming law (La.R.S. 27:114).

Louisiana's legislature found "a compelling state interest in ensuring the most efficient, honest, and accurate regulation of the gaming industry". No one disagrees with that.

Video Poker

The legislature first addressed video poker machines, which it had authorized in 1992: "[i]n order to maintain the security and integrity of electronic gaming devices and for ensuring accurate and thorough accounting procedures … all licensed video draw poker devices, video pull-tabs, and slot machines at live racing facilities [will] be connected to a central computer." This language covers video poker machines at truck stops, liquored-licensed premises, racetracks and off-track betting (OTB) facilities. Video poker machines were duly connected to a central computer system with both monitoring and control features extending to individual video poker machines.

Slot Machines

The legislature then turned to slot machines, finding "that it is in the best interest of the state and the general public that all electronic gaming devices [not just video poker] licensed in this state should be subject to this type of monitoring and accordingly that all electronic gaming devices on licensed riverboats should be linked by telecommunication to a central computer system." In other words, the legislature wanted the central

monitoring and control capability the State of Louisiana exercises over video poker machines extended to slot machine box games installed at its widely scattered riverboats, single land-based casino, and racinos. All machines, no exceptions.

Feasibility

The threshold question is, of course, whether a State-wide monitoring and control system for casino slot machines, as distinct from video poker machines, is technologically feasible.

Louisiana's legislature assumed that it was: "[t]he present level of technology in electronic gaming devices makes it both feasible and efficacious to require all electronic gaming devices on licensed riverboats in this state to be linked by telecommunication to a central computer system." In the event this turned out to an overly optimistic assumption.

The second question is why. What benefits would connecting machines to a central monitoring system produce that Louisiana does not already derive from slot monitoring systems installed at individual riverboats and racinos?

The legislature expected that a central system "will facilitate the monitoring and reading of the devices for the purposes of maintaining the security and integrity of the devices and the integrity of the information reported to the system, in order to ensure that licensees meet their financial obligations to the state."

In other words, machine integrity and accurate financial reporting are the benefits Louisiana expected a central system to provide. To make this perfectly clear, the legislature added that "[t]he most efficient, accurate, and honest regulation of the gaming industry in this state can best be facilitated by establishing a central computer system under which all electronic gaming devices on licensed riverboats will be linked to that system by telecommunication to provide superior capability of auditing, reporting, and regulation of that industry."

This is a fairly tall order. As envisioned by the legislature the central system's capabilities are formidable. The system "shall be capable of monitoring and reading financial aspects of each electronic gaming device such as cash in, cash out, amount played, amount won, games played, and games won", and "provide for the monitoring and reading of exception code reporting such as an on-line computer alert, alarm monitoring capability to insure direct scrutiny of conditions detected and reported by the electronic gaming device, including any device malfunction, any type of tampering, and any open door to the drop area."

The central monitoring system would be "located within and administered by the Department of Public Safety and Corrections, office of state police, riverboat gaming division."

Audit and control, efficiency and honesty, accurate financial reporting: the purposes Louisiana seeks to accomplish with its central systems law are desirable by any standard.

But will it work?

Louisiana's video poker central system performs the tasks the legislature prescribes. Video poker machines were connected to a central monitoring and control system when they were installed in 1992. The State pays for the system: no per-machine fees are assessed to cover its cost. The system is operated by the State Police. Using it, the State Police can monitor activity on individual machines and, if necessary, shut either individual machines or the entire system down if communications protocols are broken, indicating unauthorized access to the system. Machines report device win automatically each 72 hours, generating a report of video poker revenues: if a machine doesn't report it automatically shuts down. Operators (truck stops, liquor-licensed premises, pari-mutuel racetracks and OTB offices) aren't restricted to a single video poker device, though they have limited flexibility in their choice of video poker machines: with regulatory approval they can disconnect their facility from the system and change video poker machines from a list of licensed, approved devices.

Trying to replicate these systems capabilities for Louisiana's widely scattered slot machines proved, in practice, to be an extremely difficult task. Instead of an established network of nearly identical video poker devices system developers were confronted with thousands of dissimilar box games installed in 14 riverboats, one land-based casino (in New Orleans), and (by 2004) four slot racinos. Moreover, not all the slot machines were stationary. The riverboats cruised. The system's developers explored the idea of using secure satellite communications to stay connected to moving riverboat machines but rejected the idea as being too expensive. The legislature solved the problem of how to maintain communications with moving slot machines by ending the riverboat cruising requirement as of April 1, 2001—an unintended consequence of its 1999 central slot system law. Cruising wasn't the only casualty of the central system. The development process suffered another setback when developers discovered that Louisiana's thousands of dissimilar box games were *already* connected by riverboat and racino operators to no fewer than *five* computer monitoring systems, meaning that the central system overlaying the operators' systems has to interface with five different operating systems. More development time, more development costs.

Four and a half years after Louisiana's legislature passed a central slot systems law the system is, nearly, ready. What the legislature wanted was a State-operated central *monitoring and control* system providing regulators with control over individual slot machines, including the ability to shut malfunctioning machines down, in addition to audit and financial monitoring for individual machines and for slot gaming as a whole in real time. What Louisiana is getting is a weak *monitoring* system that is shorn of the intended individual machine control features and essentially duplicates the financial audit controls provided to licensed operators by casino computer monitoring systems designed for this purpose.

Costs

The legislature decided machine operators would pay for its slot monitoring system: "The Department of Public Safety and Corrections, office of state police, shall impose and collect an annual fee not in excess of fifty dollars on each electronic gaming device linked by telecommunication to the central computer system as provided by this Section. The purpose of the fee shall be to defray the costs to the state of acquiring, implementing, and maintaining the central computer system".

Exhibit 2: Video Gaming Devices (VGDs) in Louisiana 2003

Type	Video Gaming Device	Locations	Net Device Revenue
Bars	4,576	1,555	$33,811,997
Restaurants	3,276	1,123	25,030,728
Hotels	147	28	1,077,604
Racetracks/OTBs	844	10	4,132,347
Truck stops	5,398	138	71,262,799
Total	**14,241**	**2,854**	**$135,315,475**

Source: Louisiana State Police Video Gaming Division

There are approximately 33,500 gaming machines in Louisiana. About 14,240 of these are video poker machines, the lottery-like video poker terminals that were installed in 1992 or their lineal descendants. (Exhibit 2)

The remaining 19,200 devices installed in Louisiana are slot box games—random devices at the State's 14 riverboats, single land-based casino (Harrah's Jazz in New Orleans), and two (soon to be four, with the additions of Fair Grounds and the under-construction Evangeline Downs in St. Landry Parish) slot racinos. (Exhibit 3).

Exhibit 3: Slot Machines in Louisiana and Estimated Central System Fees

Machine Operators	2002	$50 License Fee	$5 Maintenance Fee	Total Central Systems Fee
Riverboats	14,870	$743,500	$74,350	$888,500
Delta Downs	1,462	73,100	7,310	73,100
Total	**16,332**	**$816,600**	**$81,660**	**$961,600**

Machine Operators	2,004	$50 License Fee	$5 Maintenance Fee	Total Central Systems Fee
*Riverboats	14,870	$743,500	$74,350	$8,885,000
*Louisiana Downs	906	45,300	4,530	45,300
*Delta Downs	1,462	73,100	7,310	73,100
**Fair Grounds	300	15,000	1,500	15,000
Evangeline Downs	1,627	81,350	8,135	81,350
Total	**19,165**	**$958,250**	**$95,825**	**$9,099,750**

Source: Christiansen Capital Advisors, LLC, Casino Association of Louisiana

At $50 per machine per year slot system fees will total $962,000 annually. When slots at Fair Grounds and Evangeline Downs come online the State's slot machine population will rise to 22,000 machines and annual license fees will increase to $1.1 million. The $50 per-machine license fee sunsets on August 15, 2005, but the legislature, cognizant of the need for on-going maintenance of the central system in perpetuity, added an annual $5 per slot machine maintenance fee. For the approximately 22,000 slot machines Louisiana will have once Fair Grounds and Evangeline Downs slots are operating this $5 maintenance fee will come to $110,000 each year. All told, slot system-related fees will total $1.2 million in 2004.

This money, and whatever other money Louisiana's central slot system absorbs in installation and maintenance costs over its lifetime, could have been left with riverboat and racino operators to pay labor or other operating costs or it could have been collected by the State of Louisiana and used to fund government budgets. Either way, Louisiana's slot systems law represents a diversion of gaming revenue to the system supplier.

Cost Benefit

Is Louisiana's central slot monitoring system worth it? Duplicating the monitoring functions of riverboat/racino slot monitoring systems certainly doesn't hurt, but does the duplication materially improve slot machine integrity and the financial reporting computer monitoring systems at the operator level already provide?

One way to answer this question is to consider the experience of Nevada, New Jersey, and other States that have authorized casino gaming. These States require licensees to connect their slot machines to computer monitoring systems. Regulators have access to the audit and machine activity data generated from these monitoring systems—all of it. Licensees and regulators have common interests in accurate machine reporting and in ensuring the integrity of each and every machine game. Casinos don't want to be defrauded. The regime of gaming control developed through trial and error in Nevada and New Jersey and other States that allow gaming is designed to ensure that fraud is not committed—by licensees or by members of the public.

Gaming control works. Neither Nevada nor New Jersey, the jurisdictions with the longest experience of gaming, has created a central, State-operated slot monitoring system.

Louisiana's new central slot monitoring system adds nothing to existing controls. It simply duplicates controls that were already in place and being paid for by licensees. In retrospect, Louisiana might simply have emulated the regime of gaming control proven in Nevada, New Jersey and the other riverboat States and saved its taxpayers the substantial development and on-going maintenance costs of its brand new but probably unnecessary central slot monitoring system.

Delaware, West Virginia and Other Lottery Machine States

Delaware, West Virginia, Rhode Island, Oregon and several other States that have used lottery laws as the basis for machine gaming have their video lottery machines (however defined in law) connected to central monitoring systems. The genesis and early history of these lottery machine gaming industries is presented in an Appendix to this paper.

Because machine games were introduced in these jurisdictions through existing lottery laws instead of new gaming law, video lottery devices, whether programmed for video poker or video spinning reels, were installed on the lottery pattern: as player-operated terminals of lottery computer networks. Some of the problems encountered in Louisiana in connecting box games already operating in riverboats and racinos were thus avoided. But other problems, serious ones from the operator's point of view, remain.

Business Disadvantages of Central Systems

The fundamental disadvantage of a central system from the slot machine operator's point of view is that it limits the operator's choice of machines. As Louisiana's experience shows, the bewildering variety of box games on the market today confronts system designers with an insoluble problem: how to adapt a lottery-like central system designed to interface with one or a limited number of terminals for use with an ever-changing number of dissimilar devices connected by slot operators to a number of different operating systems?

By their nature, lottery central systems limit operator choice among machines. A central monitoring system makes it more difficult for casinos or racinos to swap machines in and out of casino floors. There are simply too many games to choose from, and too many more new games appearing each month. Casino slot managers trying to keep ahead of the torrent of new products pouring from machine manufacturers have a devil behind them in the form of ever-shifting consumer preferences for the next hot slot machine. What game will slot players want to play next year? Who knows? Only the consumer knows, and he or she isn't telling.

Especially when they operate in competed markets, slot managers must continually freshen the mix of games they offer consumers who demand hit games. If slot managers can't respond to shifts in consumer preferences because of central system limitations (or any other reason) slot business suffers and government gaming revenues decline. Slot floors are hard enough to reconfigure in jurisdictions (like Nevada and New Jersey) where central slot systems aren't required; increasing this difficulty by overlaying open architecture casino monitoring systems with closed architecture lottery monitoring systems cripples machine operators' ability to respond to changing consumer demand. In business terms this is dysfunctional.

The on-going conversion of casino machine games to cashless technology is creating an additional systems problem. Coins are dropping out of machine gaming. Cashless devices are replacing coin-in machines in machine operations throughout North America

as fast as replacement cycles will allow. Central systems currently in use in West Virginia and other jurisdictions limit operators who want to convert to cashless gaming to a single wire solution for ticketing. This limitation, like limitations on the kind of device that can be swapped in and out of a central system, introduces an unnecessary business dysfunction: operators lose flexibility in configuring their casino floors and find themselves at a competitive disadvantage with tribal and State-licensed casinos that aren't hampered by this central system technical limitation.

Machine Leasing Proposals

There are similar objections to machine leasing proposals. The expanded gaming initiatives that surfaced in 2003 stimulated debate over the proposition that it is in a State's interest to lease machines from a supplier rather than give a gaming facility operator the autonomy to deal with the suppliers directly. The argument put forward in favor of machine leasing proposals is that a State, by placing an order for the lease of all the machines to be installed in the jurisdiction, can obtain them at a lower price than individual operators making separate purchase or lease agreements. State purchasing of lottery systems and (in States with video lottery machines) video lottery terminals are cited as support for the proposition that government bidding procedures can be competitive with the private sector in contracting for machines.

This argument that State experience in contracting for lottery systems proves States can do a better job of negotiating machine lease agreements is difficult to evaluate. All U.S. lotteries are State agencies. There is no bidding from the private sector for lottery systems. Lottery agent-operated terminals (TIMs) are typically part of the system contract, making comparisons with private-sector performance impossible. It is perhaps worth noting that the lottery contract bidding process has proven to be a troublesome, litigious process in a number of jurisdictions.

There are, however, business arguments against State machine leasing agreements.

First, government purchasing agencies are typically required to select the low bidder or weight price heavily in the selection process. Slot machines, however, are not undifferentiated commodities. There are many hundreds of box games on casino floors today. Some of these games are much more popular with slot players than others. It is not true that one box game is as good as another, or that all box games will perform alike. Because of consumer preference, some slot machines will win much more than others if placed side by side on the casino floor. It is very unlikely that the cheapest slot machine will be the best slot machine. Government purchasing agents, required by law to weight price heavily in purchasing decisions, would be unable to lease the best machines if (as is likely) the best machines are more popular with consumers.

Second, government agencies are very unlikely to have enough understanding of consumer preferences among the hundreds of slot machines on the market today to make informed decisions as to what machines represent the best investment. Casino/racino operators, who deal with consumers directly every day, do have this understanding. No

one would seriously propose that government agencies should select movies for a State's cinema multiplexes: this decision is most effectively made by theater managers, who understand the preferences of local moviegoers. Slot machines are a similar case. Like movies, slot machines are highly differentiated entertainment products. Consumers play some machines and ignore others. Choosing machines that correspond to consumer preferences is one of the fundamental business tasks of casino/racino slot managers. Government leasing proposals in effect transfer this function to government purchasing agencies. Government purchasing agencies do not have the expertise to discharge this business function in an effective manner.

Third, lease agreements typically run for a number of years, locking operators into whatever machine the State chooses for long periods at a time when machine replacement cycles are contracting and consumer preferences among machine games are more volatile than at any point in the history of gaming.

Although impossible to quantify, these are serious disadvantages, especially for operators who compete in markets that are supplied by tribal or State-licensed casinos that do not operate under similar restrictions. States that authorize machine gaming have a vested interest in maximizing operator flexibility in business decision-making, not minimizing it. Operator choice among machines is fundamental to machine game operations. State machine leasing agreements that take the choice of machine out of individual operator hands deprive operators of a basic business tool. The long term effect of this policy would be to reduce operator revenue and thereby reduce gaming privilege tax receipts.

Systems Used in Gambling Industries

The assumption Louisiana's legislature made in 1999, that "[t]he present level of technology in electronic gaming devices makes it both feasible and efficacious to require all electronic gaming devices on licensed riverboats in this state to be linked by telecommunication to a central computer system", proved to be dead wrong in practice but is all too common. Legislators are lawmakers, not systems engineers. It is easy for people who aren't technicians to assume that computer systems can do anything. They can't. Computer systems do very particular things. Complex computer systems are like highly evolved forms of life: the products of lengthy trial-and-error adaptation to specific niches in business operations. System capabilities reflect business requirements: change the requirements and system performance degrades—or stops functioning altogether.

This is the pitfall Louisiana stumbled into in 1999. Because its video poker machines, designed as terminals of a computer network, had been connected to a central monitoring and control system since they were installed in the early 1990s Louisiana assumed, as anyone unfamiliar with the complexities of machine gaming might assume, that Louisiana's 15,000 widely scattered, dissimilar, self-contained box games could be connected to the same kind of monitoring and control system. Louisiana found out the hard way that central systems that work well with video lottery terminals don't work well at all with already self-contained installed box games.

This aspect of machine gaming is something that lawmakers considering expanded gaming need to understand. As Exhibit 4 shows, there are approximately 544,000 gaming machines installed in North America. [1] Approximately 73,000 of these machines are central system-friendly video lottery terminals but most of them are self-contained box games.

Exhibit 4: North American Machine Population

States	2002 Number of Machines
Deadwood, South Dakota	2,801
Michigan	7,600
Nevada	209,584
New Jersey	38,117
Casino States (sub total)	**258,102**
Illinois Riverboats	9,549
Indiana Riverboats	17,024
Iowa Riverboats	8,620
Louisiana Riverboats (& Harrahs Jazz)	17,770
Mississippi Riverboats	40,427
Missouri Riverboats	16,599
Riverboat States (sub total)	**109,989**
Delaware	5,339
Iowa	3,504
Louisiana Tracks	1,500
*Louisiana VGD	14,241
*Montana VGM	18,074
New Mexico	2,300
*Oregon	9,450
Rhode Island	2,478
South Dakota	8,000
West Virginia	7,523
Racino & VLT States (sub total)	**72,409**
**Indian Facilities(E)	102,347
Total	**542,847**

* 2003 number of machines

** Estimated number of devices at Class III facilities in the following States: Wisconsin, Michigan, New York, Washington, New Mexico, California, Connecticut

Source: Christiansen Capital Advisors, LLC

Connecting slot machines to a central system is not a simple task. Even when it can be accomplished the controls the central system provides may not be as extensive as the control central lottery systems provide for video lottery terminals, as Louisiana learned.

[1] The machine count for Indian facilities in Exhibit 4 considerably understates the actual number of Class II and Class III machines actually installed in Indian Class II and Class III facilities. A lack of reliable statistics for Indian facility machines in some States and uncertainty as whether some machines are Class II or Class III devices are the principal reasons for the understatement.

And central systems degrade the performance of casino slot operations by making it harder for slot managers to swap machines in and out of the system, making it impossible to compete with casino machine operations that are not encumbered by a central system's technical limitations.

Aside from casino table games, poker and similar card games, paper or board games, instant (ticket) lotteries, bingo, pull-tabs, punch-boards and the like gaming and betting in the United States today is transacted through or monitored by online computer systems. These systems evolved in different industries at different times for different purposes, but they fall into two broad categories: ticket issuing machine (TIM) systems, and monitoring/accounting systems used to control random devices on casinos floors. A third systems category may be emerging: server-based systems, in which game software is downloaded from a central system onto PC-like devices on casino floors. Cyberview Technologies, the pioneer in this new approach to machine gaming, is making headway with it in Germany and the United Kingdom, but the enormous size of the North American machine population and the inherent conservatism of gaming regulators where technological innovation is concerned are formidable barriers to the rapid adoption of server-based gaming in the U.S. and Canada.

Exhibit 5: Systems Used in Gambling

System Type	Purpose	Terminals	Operator
Ticket Issuing Machine (TIM) Systems			
Totalizator (pari-mutuel)	Control Terminals (TIMs)	Dumb	Agent
Lottery	Control Terminals (TIMs)	Dumb	Agent
Monitoring Accounting and Control System			
Casino Machines	Account for & Control Random Stand Alone Machines	Active	Player
*Server Based Gaming			

*Cyberview Technology systems, operating in the United Kingdom and Germany

Source: Christiansen Capital Advisors, LLC

Exhibit 5 summarizes the salient characteristics of the computer systems in use in gambling industries today. Each developed under particular laws (pari-mutuel law, lottery law, casino gaming law) over decades; over time these industry-specific applications have become remarkably specialized. In no sense are these systems interchangeable. None are one-size-fits-all solutions for every systems application in the complex and rapidly changing gambling industries of today. A brief discussion of the general characteristics of these system categories follows.

Lottery and Totalizator Systems

Lottery and totalizator systems activate and control agent-operated ticket-issuing machines (TIMs), rather in the manner of online supermarket cash registers. Customers don't interface with these systems or with their terminals (the machines that issue pari-mutuel or lottery tickets) directly. They interface with operators (lottery agents, pari-mutuel cashiers, supermarket checkout girls). The systems' terminals are data entry devices: bettors or lottery players ask agents to enter the bets they wish to make; these data are then transmitted to a central computer system which processes it, generates a number by which the bet can be validated if it proves to be a winner, and sends the result back to the TIM, which then prints a ticket recording the bet. This ticket is handed by the agent-operator to the customer as a record of the wagering transaction.

Totalizator and lottery systems are true wagering systems, in that wagers are transacted through them. The wagering software resides in the system's central processor; by altering this software new wagers (new horse race bets or new lottery games) can be introduced, which then can be accepted by the agents who operate the system's TIMs. The TIM itself is dumb. Unless it is connected to the online lottery or pari-mutuel betting system and the system is up it can't do anything.

Because players do not interface directly with TIMs consumer preferences aren't immediate concerns for lotteries and pari-mutuel businesses. TIMs are updated when system contracts are renewed, or, less frequently, when and if system vendors develop a new and improved TIM. Customer preference does not drive TIM selection: there is typically a very limited choice of TIMs available to lotteries and racetracks, often limited to the terminals manufactured by the totalizator or lottery systems vendor. The fact that TIMs are married to these wagering systems is not a disadvantage, since the interface with the consumer is through the agent operating the TIM, not the TIM itself. Although customer-operated TIMs somewhat like bank ATMs have made limited progress in the pari-mutuel industry the overwhelming majority of pari-mutuel wagers and online lottery sales are transacted through agents or cashiers.

As with everything else in gambling, the integrity of these wagering systems is a paramount design consideration. In theory, activity on TIMs is absolutely controlled, meaning that the system is secure from attempts by agents (or anyone with access to the system or its terminals) to defraud it—including employees of the system vendor who have access to some part of the central computer system or its software. In practice, as the recent Breeders' Cup scandal all too clearly demonstrated, wagering systems, and by implication central monitoring systems, are vulnerable. In the case of the Breeders' Cup scandal an employee of the system's vendor who had access to the system in his capacity as a software engineer was able to generate and cash fraudulent winning tickets. No comparably serious instance of a compromised casino slot monitoring system has come to light, an indication that the established regimes of gaming control that utilize data generated by casino slot monitoring systems is a better guarantee of machine integrity than a central system.

Central systems of the kind used to connect video lottery terminals fall into this general category. Video lottery terminals are player-operated, not agent-operated; but because they were initially designed with lottery system requirements in mind they interface well with lottery central systems. States like New York that for legal (not business) reasons bring machines in under lottery laws instead of enacting new law specifically authorizing casino gaming are, in effect, deciding on video lottery machines controlled by a central lottery system.

When video lottery machines have to compete with casino environment machines that aren't hampered by central lottery system technical limitations they are placed at a disadvantage. Louisiana's experience with racetrack machines illustrates this point. Central system video poker machines were authorized at Louisiana racetracks in 1992: the State's riverboat and Class III Indian casinos were just getting underway, and in these grossly undersupplied market conditions racetrack video poker did very well. Today, as Exhibit 3 shows, Louisiana has more than 15,000 casino slot machines—including slot machines at its racetracks. Consumers prefer slot machines, and racetracks are phasing central system video poker out of their machine gaming operations. Over the next three years video poker will be entirely replaced by slot machines in Louisiana racetracks operations.

Casino Monitoring and Accounting Systems

Another kind of system monitors self-contained random devices (slot machines and similar machine games) on casino floors. The prototypes of these monitoring systems were developed in Nevada in the 1970s by Bally and, internally, by casino companies, using mainframe computers to provide casino management with real-time slot accounting and controls. Although first deployed as an accounting and control system, slot monitoring systems evolved into the online player-tracking systems that are ubiquitous in casino slot operations today—and are the guts of the industry's customer relationship management (CRM) programs.

Casino operators and regulators use the data generated from casino machine monitoring systems to ensure that every dollar passing through every machine is accurately accounted for—and that gaming privilege taxes are fully and accurately paid. Nevada, New Jersey, Illinois, Indiana, Mississippi, Iowa and Missouri have all established regimes of gaming control that utilize the output of casino machine monitoring systems for these purposes. In all these jurisdictions this system of gaming control has worked satisfactorily: as noted, no cases of casino slot machine monitoring systems being compromised have come to light, and the integrity of computer-monitored casino slot machines, a common concern of licensees and regulators, is something slot players are able to take for granted. The central slot system Louisiana will bring up later this year will essentially duplicate the monitoring functions of casino slot systems.

Issuing Tickets vs. Monitoring Random Devices

Slot gaming, pari-mutuel betting and lotteries are fundamentally dissimilar activities, and slot machines and TIMs differ in several crucial respects.

As already noted, TIMs are dumb. The randomizing device in horse racing is the horse race; in online lotteries it is a random number generator in the central computer system. Horse and lottery players do not try these devices directly: they wager on them through TIMs operated by agents or cashiers.

Slot machines are player-operated random devices. Prior to the introduction of online monitoring systems slot machines were stand-alone devices. Slot players play the machine, not a computer system behind the machine.

Market pressures have forced the evolution of centrally controlled video lottery machines that are nearly perfect versions of casino slot machine offerings, particularly in Delaware, West Virginia and Rhode Island. Someone playing a video lottery machine connected to central computer in these States enjoys an experience that is not fundamentally dissimilar to playing a slot machine that is not connected to central computer. As a consequence, video lottery machine operators ("racinos") in these States have the business needs casinos have—not the business needs of lottery ticket agents. This is especially true for video lottery machines in racetrack ("racino") operations.

Consumers are indifferent to the terminals agents use to issue tickets: it is the ticket they receive as the physical record of the bets they make (win-place-show, exacta, quinella and so forth in horse racing, pick 3, pick 4, lotto and so forth in lotteries) that matters, not the machine that issues it. In contrast, consumer preference among player-operated machines is extremely important, whether the machine is a casino slot or a video lottery machine in a racino.

The thousands of new games exhibited at G2E, the frenzied licensing of intellectual property (brands) by slot manufacturers seeking to differentiate their machine games, the shortening product replacement cycles for slot machines as casinos seek to keep up with shifting consumer preferences all testify to this. Slot machine gaming has become a hit-driven business: players, not suppliers, decide which games are hits, and when a hit materializes every casino and racino and riverboat is forced by consumer preference to offer it. The fact that casinos devote floor space to popular participation machines games, the revenue from which they unwillingly share with machine manufacturers, is the best proof of how powerful a force consumer preference among slot machines is in casino operations today.

The consumer preference for particular machines makes the slot area of casino floors highly dynamic. Slot managers change the mix of games as consumer preferences change. The open architecture of casino slot monitoring systems facilitates this never-ending process. Lottery systems, where the TIM and the system are married, frustrate it. Operators of machines connected to central lottery systems have less flexibility in their choice of machines than casinos do. As a result, central systems that make sense in instant ticket environments make no sense at all in casino/racino environments.

Appendix A

This Appendix presents a summary of the experience with gaming devices (video poker, video reel displays, and reel-spinning slot machines) in other North American markets.

Background

Gaming devices made their first legal appearance outside State-licensed casinos in the late 1980s. The watershed event was the introduction of video poker lottery terminals, or VLTs, in South Dakota in 1989, followed by the introduction of similar non-lottery devices in Montana in 1990. The South Dakota and Montana devices were close substitutes for casino machine games: video slot machines, video poker, and video facsimiles of other games of chance that paid players their winnings not in cash but in the form of vouchers redeemable at the cashier of the establishment in which the machines were located.

The South Dakota and Montana machines joined older, reel-spinning slot machines in Nevada route operators and in charitable and fraternal organizations on Maryland's Eastern Shore to create a new U.S. gambling industry: machine gaming outside casino environments, available in local retail businesses at the neighborhood level. In both States (and later in Oregon and most provinces of Canada, which followed this model), these devices were restricted to liquor-licensed establishments. Depending upon the jurisdiction, each retail location was allowed five, ten or twenty such machines.

At first the racing industry viewed neighborhood gaming devices as a destructive combination of two of their worst competitors, lotteries and casinos. Some racetracks, however, financially distressed and desperate for revenues, decided to emulate South Dakota's video poker operators and seek permission for the addition of VLTs in their facilities. In this way a new chapter in the evolution of North American racetrack operations began. In the past decade video poker machines ("VLTs" when operated pursuant to State lottery laws as video lottery terminals) and reel-spinning slot machines have been installed at racetracks in a number of States, with (especially in the case of slot machines) spectacular financial results.

West Virginia

West Virginia was the first State to accept this argument and allow the introduction of a substantial number of VLTs at a racetrack. On June 9, 1990, approximately 80 terminals[2] were installed at Mountaineer Park, in the State's northern panhandle. The number of VLTs was soon raised to about 165; rather than concentrating the machines in one place Mountaineer Park scattered them in various spots throughout the facility.

Mountaineer Park's new machines were popular, but not wildly so. Slot-type games and even video poker were initially not allowed. Mountaineer Park and West Virginia's lottery embarked on a trial-and-error process of experimenting with types of games, locations, prize structures, revenue allocation, and hours of operation. Device win improved incrementally: from a total of about $2.5 million in the first twelve months to

2 Owned by the State lottery, which permits racetracks to operate them.

$4.2 million in 1992 and $5.3 million in 1993. CCA estimates that the latter figure was equivalent to about $21 per year per adult within the track's local market area; by comparison, land-based casino slot facilities typically average about $300-400 per local adult per year.

The West Virginia experiment was limited to Mountaineer Park for four years. In the late summer of 1994, however, West Virginia's other three tracks were allowed (subject to local approval) to provide more substantial numbers of more attractive machines (reel-type games remained prohibited), with up to 400 machines permitted at each location. Charles Town, near Washington, D.C., a moribund racing facility, did not receive local approval, but two Greyhound tracks (at Wheeling and Charleston) did. The new machine gaming facilities at these tracks, and the Mountaineer Park expansion, opened early in September, 1994, and immediately proved very popular. The annualized rate of win at Mountaineer Park more than doubled, and the other two tracks' VLT facilities attracted similar rates of spending. In June of 1995, the number of machines at each track was increased to approximately 800, and machine revenues increased further. Learning from the experience of Iowa and Delaware (described below), the State authorized reel-type games in 1996, and gaming revenues took yet another step upward. Following several unsuccessful efforts to obtain local approval for devices, the Charles Town track (with the assistance of Penn National Gaming) finally obtained a favorable vote in November of 1996.

In the fall of 1996, Penn National Gaming obtained an option to acquire Charles Town racetrack. In November of 1996, following a favorable referendum on gaming devices, Penn National Gaming exercised its option, bought the Charles Town facility at a cost of $16 million, and on October 17, 1997 installed 400 VLTs. Results were overwhelmingly positive. Penn Nationals revenue has risen from $55.6 million in 1995 to $154 million in 1998. The machines substantially increased Penn National's EBITDA and boosted its stock price. From a trading range of 10-12 in the third quarter of calendar 1996, Penn National common rose to a high of 20 in November of 1996, and has since declined to $7.50 as of March 30, 1999 due to, ironically enough, declining pari-mutuel revenues from competition in Delaware and the failure of legislation that would have allowed slots at racetracks in Pennsylvania.

Iowa and the Birth of the "Racino"

If the use of VLTs at racetracks was pioneered in West Virginia, the history of Prairie Meadows encapsulates the "racino" experience that is driving the expansion of this form of gambling in North America today.

Like many other States, Iowa had no legal gambling (other than charity bingo) until 1982. Around this time, the North American racing industry, in response to the economic pressures that had begun to affect it in the 1970s, was seeking to expand into new markets. Racing promoted itself as economic development, with large numbers of jobs, beneficial impacts for agribusiness, and a relatively soft form of gambling, with ample precedent in the fact that 29 States had seen fit to make it legal by 1980.

These arguments were persuasive in Iowa. A Thoroughbred/harness racetrack in Altoona (Des Moines), Prairie Meadows, was built with $40 million of bonds guaranteed by Polk

County through a lease-purchase agreement. The racetrack opened in March 1989 and failed to meet feasibility projections by a wide margin. In 1991 the track filed for bankruptcy; in March 1992 the track's operator folded. In 1993 Polk County purchased the track outright in a $38,830,000 refunding.

In the meantime, Iowa had legalized limited casino gambling on riverboats in the spring of 1989, shortly after Prairie Meadows opened, but before the full extent of its difficulties had been recognized. Iowa was the first State to legalize riverboat casinos; as it had been with racetracks, the motivation was economic development: to attract tourists, generate jobs, create incentives for new investment in depressed riverfront areas, and so forth. [3]

In 1994, Iowa voters authorized reel-spinning slot machines at Iowa racetracks (including Greyhound tracks).[4] Polk County spent an additional $26 million to convert the Prairie

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3 In an effort to keep Iowa from turning into another Las Vegas (or Atlantic City), many limitations were codified in that first statute: no one could bet more than $5, no individual could buy in for more than $200 per cruise, gaming could only occur while the riverboats cruised, no more than 35% of the floor area could be devoted to gaming, Iowa-related live entertainment must be provided on board, etc.

4 Polk County was joined in its distress over one failing gambling operation (Prairie Meadows) by other areas of Iowa that were suffering a similar problems with their riverboats, which were departing Iowa, with its onerous restrictions on bet limits and hours of operation, for less restricted opportunities in neighboring Illinois. Moreover, Iowa's Greyhound tracks had by now realized that their ongoing declines would be terminal without drastic action. This confluence of forces led to an omnibus bill in the Iowa legislature which (a) removed most of the restrictions on the State's riverboat casinos, and (b) allowed gaming devices at its racetracks. In one last gasp of anti-gambling/misplaced consumer protection sentiment, a key legislator demanded that since he understood video gaming machines to be the most addictive type, they should be banned from the racetracks -- meaning that only traditional slot machines with real reels could be installed there. Accepting half a loaf as better than none, the racetracks acquiesced in this amendment, the legislation passed, and was signed by the governor.

This last-minute amendment ironically added to the ultimate success of Iowa's soon-to-be-built racetrack gaming facilities. Since 1990, a variety of experiments with video lottery terminals, or VLTs, had been going on at the racetracks of West Virginia, Louisiana, and Rhode Island. (Even earlier, beginning in 1989, VLTs had been introduced on a widespread basis in South Dakota, followed by Montana, Oregon, and a number of Canadian provinces. As these machines were very successful, and always video devices, it appears likely that complaints against them formed the basis for the Iowa legislator's objections to video devices at the tracks.) The initially-fumbling attempts in these other States with racetrack devices were leading, unbeknown to the politicians of Iowa, to the conclusion that slot machines, video or not, were what the gambling public wanted.

Slot machines were therefore what the public in Iowa got. The citizens of Polk County dug deeper into their pockets and came up with another bond issue of $26.6 million to remodel the grandstand at Prairie Meadows into a casino and purchase 1,100 slot machines. The private owner/operators of Bluffs Run Greyhound Park, in Council Bluffs, Iowa, financed and constructed a similar facility there. The Bluffs Run slot casino was actually the first to open, on March 15, 1995; it was packed on opening night, and on every night thereafter. Day after day, its slot machines won roughly $370 apiece, for totals of $400,000 per day, $2.8 million per week, and an annual rate of more than $140 million. This was mildly astonishing, but perhaps comprehensible given the population of the greater Omaha/Council Bluffs area (about 620,000) and its easy access from Kansas City and the whole State of Nebraska. Prairie Meadows, on the other hand, was located near a metropolitan area of just 350,000 (Des Moines).

Yet when Prairie Meadows opened its slot facility at the beginning of April, 1995, the story was the same: standing room only, slots winning $330 per day, roughly $360,000 per day, $2.5 million per week, an annual rate of about $130 million. This rate has since slackened only slightly; for the 12 months ending 3/31/97, total slot win amounted to $122 million. This compares with approximately $8

Meadows clubhouse into a casino and install 1,100 slot machines. On April 1, 1995 the slot casino (or "racino") opened for business. In the 12 months ended March 31, 1996 machine revenues totaled $119.3 million, enabling Polk County to pay off the $27 million bond issue that paid for the clubhouse casino conversion within that initial year and retire the track's initial $38.8 million bond issue 17 years early. Racing returned to Prairie Meadows, subsidized by revenue from slot machines. Purses, also subsidized by slot machine revenues, were increased, attracting higher-quality horses. In turn, these higher-quality races are being exported by Prairie Meadows to other racetracks and simulcast facilities throughout North America, a high-margin, profitable business. Slot machines also appear to have had a positive impact on Iowa horse breeding.[5]

Prairie Meadows demonstrated to the racing industry the enormous popularity and potential profitability of casino (slot-machine) gaming, and, moreover, its potential for increasing purses and quality of racing. With only a small portion of the revenues from its slot machines, Prairie Meadows has already raised its purses by a factor of six, from about $20,000 per day prior to slots to a planned $126,000 per day over the 1997 racing season.[6]

Similarly positive experiences with gaming devices occurred at the Iowa Greyhound tracks. Bluffs Run's casino was joined by two riverboats that opened in its market area in early 1996, but the riverboats took only a modest portion of Bluffs Run's slot win. Over the twelve months ending 3/31/97, Bluffs Run slots won $111 million, while the two riverboats slots won just $99 million over the same period (plus $46 million in table-game win, for a total win of $145 million on the riverboats). The racetrack slot facility is, in fact, winning more than its fair share: Bluffs Run has 1,200 slot machines, and its average daily win per machine is currently about $253; the two riverboats combined have 1,905 machines, and an average daily win of about $142. (Note that Iowa riverboats, while not as similar to land-based casinos as Mississippi boats are, now need cruise only briefly.) [7]

A third Iowa trackside slot facility, at Dubuque Greyhound Park, did not open until November of 1995. In a smaller market, and in competition with two riverboats (one on the Iowa side of the Mississippi and one in East Dubuque on the Illinois side), its 544 slots won a total of $21.7 million in the twelve months ending 3/31/97. Again, the racetrack facility appears very competitive with nearby riverboats. Its small scale is perhaps a detriment, however, as its daily win per machine is only about $110, versus $125 at the nearby Dubuque *Diamond Jo* riverboat. (Slot win on the Illinois riverboats, which unlike the Iowa riverboats *must* cruise when the weather permits, is a paltry

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million in gambling revenues (total pari-mutuel commissions) from Prairie Meadows's racing operations, little changed from the last year before slot machines, for total gambling revenues of $130 million.

5 Randy D. Parvin and Steven G. Koven, "Limits on Economic Development Policy: State-supported Gambling in Iowa", Policy Studies Review (Autumn/Winter 1995/1996), contains a thorough evaluation of the Prairie Meadow experience.

6 Including purse supplements for Iowa-bred horses. The racing department's biggest problem at Prairie Meadows now is no longer one of attracting horses, any horses, but of finding some way to reward the owners and trainers of those lower-level horses who stuck by the track through its lean years but are now being squeezed aside by recent arrivals from other States by the much more attractive level of purses.

7 In addition, there are two Indian casinos at a distances of 40 to 60 miles from the metropolitan area providing additional competition.

$10-13 per machine per day.) And at both Dubuque and Bluffs Run, contributions from the slot revenues toward purses have substantially raised the standing of each track as an attractive location for better-quality racing stock to run.

Delaware

Learning from the experience of other States, when Delaware authorized VLTs at its racetracks in 1995, it left the numbers and types of devices to be installed up to the discretion of the State Lottery. After a long period of study and negotiation, the lottery opted for real-reel slots (as well as video devices). Two of these slot facilities opened late in 1995 and one in early 1996. They have been an instant success. In calendar 1996, the three Delaware facilities slots won $184 million, with wins per machine per day in the range of $230 to $360. In 1998, the three Delaware facilities slots won $351 million, with win per machine per day in the range of $272 to $463. At $463 per slot per day, machines at Delaware Park are the most profitable in the country. Based on the 1998 net win of $351 million, the tracks' share from the operation of slot machines should be roughly $173 million for calendar year 1998.

Table A.1: Calendar 1998 Delaware Racetrack Device Performance

	Delaware Park	Dover Downs	Harrington	Totals
Amount Played	$2,247,038,800	$1,285,846,900	$665,255,900	$4,198,141,600
Amount Won	$2,075,136,600	$1,172,731,500	$599,452,300	$3,847,320,400
Net Proceeds	$171,902,200	$113,115,400	$65,803,600	$350,821,200
Avg. Terminals	1,017	1,031	661	2,709
Win/Unit/Day	463	300	273	355

Source: Christiansen Capital Advisors, LLC

Furthermore, it appears that the introduction of slot machines has benefited racing in Delaware as well. The contributions slots have made to Delaware purses (around $40 million in 1998) are already upsetting the balance of power among horse tracks in the Northeast. Maryland, Pennsylvania (which also borders West Virginia) and Massachusetts are seeing quality horses leave their tracks for Delaware. This flow of horses following slot machine money is adding to the political pressures for slots at tracks in Maryland, Pennsylvania and Massachusetts.

Delaware slot machines have attracted money from other States. To the north in Pennsylvania, Philadelphia Park has seen its business shrink by almost 30 percent since 1996. Other Pennsylvania tracks are suffering nearly as badly.

Louisiana

Louisiana authorized video poker machines in 1992 for restaurants, bars, truck stops, racetracks, and OTB facilities. These machines are regulated not by the State lottery but by the State Police, but are still usually referred to as VLTs. Most premises were initially limited to a maximum of three machines, but truck stops were allowed 50 and the number at pari-mutuel facilities was not limited.

Louisiana Downs, in Bossier City/Shreveport, installed 540 machines on July 1, 1992; by November of that year it had increased their number to 716.[8] This number was then reduced to approximately 500, where it remained until lower volumes of business following the opening of nearby riverboat casinos prompted another reduction, to 386, in the spring of 1994.

8 The experience at the other tracks in Louisiana was similar, but reported results are complicated by the openings, at various times, of OTB facilities and riverboat casinos, and the closing of one of the two tracks in the New Orleans area. With no nearby OTB facilities, and nearby riverboats opening in a group, Louisiana Downs provides in our opinion the clearest illustration of the Louisiana experience.

About Christiansen Capital Advisors, LLC

The principals and staff of Christiansen Capital Advisors, LLC (CCA) have performed studies of the economics, management, operations, taxation, and regulation of leisure and entertainment businesses in more than fifty states, provinces, and foreign countries, with particular focus on gaming and wagering.

The subjects of these studies have included sports, entertainment, communications, casinos, sports wagering, lotteries, and all segments of the racing and pari-mutuel wagering industries.

Christiansen Capital Advisors, LLC has provided consulting services to State and local governments, gambling operators, telecommunications companies, and major investment banks regarding many facets of the gambling industry.

CCA has testified concerning gambling legislation before the U.S. Congress, state legislatures, local government bodies, and regulatory agencies.

The results of CCA's studies have been presented in a number of venues including the 2003 Global Gaming Expo, the National Conference of State Legislators, the International Conference on Gambling and Risk-Taking sponsored biannually by the University of Nevada/Reno, the World Gaming Congress, the University of Arizona's Race Track Industry Program's annual Symposium on Racing, and the annual conferences of the American Horse Council, American Greyhound Track Operators Association, World Greyhound Federation, Harness Horsemen International, Harness Tracks of America, Thoroughbred Racing Associations, and Racetracks of Canada.

With a combined principal and associate experience in gambling of nearly 50 years, CCA has an unparalleled reputation for integrity, detail, knowledge, and skill in assessing existing and new gambling markets.

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